

NetworkWorld

The leader in network knowledge ■ www.nwfusion.com

April 19, 2004 ■ Volume 21, Number 16

A Wider Net

Network pros: You oughta be in pictures

Digital cinemas open new career path; still learning about the popcorn.

■ BY DENISE PAPPALARDI AND JENNIFER MEARS

Move over Halle Berry. Step aside Tom Cruise. The movie industry's next casting call is for network and IT pros. That's because the film business is on the verge of a revolution that centers around digital cinema technology, which will entail zipping movie files over satellite and land-line networks onto new high-speed networks at cinemas. The new system, which has been in the works for about five years, will replace largely manual distribution methods that haven't changed much since the release of "The Great Train Robbery" in 1904.

Digital cinema holds the promise of slashing distribution
See Cinemas, page 14

DAN VASCONCELLOS

Cisco to revamp IOS software

■ BY PHIL HOCHMUTH AND JIM DUFFY

NEW YORK — Cisco will release a new version of its core IOS operating system in the coming months that is more modular, flexible and secure, company executives said last week.

The advance will let users add features to routers and switches without taking them offline, and help companies speed the deployment of services such as VoIP, quality of service and security while minimizing the risk of glitches.

Some users and analysts say
See Cisco, page 12



“Modularity means you have the ability to partition. So you have a real-time kernel, rather than the classic embedded kernel.”

Mike Volpi, Senior vice president, Cisco Routing Technology Group

High-end router on tap

■ BY JIM DUFFY

NEW YORK — Cisco plans to unveil by June its next-generation Internet core router, a key part of the company's bid to retain its sizable market lead in the face of growing competition from Juniper and others.

Cisco Senior Vice President Mike Volpi last week confirmed that a new platform running 40G bit/sec OC-768c interfaces and
See Router, page 12

Users turn to virtual data marts

■ BY ANN BEDNARZ

As companies work to integrate new and legacy application systems, the cost of that effort continues to climb — already it consumes about 35% of the total cost of installing, writing or modifying an application, according to Gartner.

IT departments are under pressure to make operational data trapped in transactional systems available faster and to a broader audience of users. The problem is spawning new products from IBM, Oracle and BEA Systems — and a crop of start-ups including Avaki, CenterBoard and Composite Software — that help com-

panies glean business information on the fly.

So-called data integration tools let users run analytic queries against distributed data sources without having to replicate the data or alter existing application sources. Queries run over corporate networks, polling internal and
See Integration, page 56

Security holes force firms to rethink coding processes

■ BY ELLEN MESSMER

Microsoft's issuance last week of 14 security patches raised fears that worm-based attacks would follow and sparked discussion on how to better build code.

Of the holes identified in Win-

dows XP, Windows Server 2003 and older versions, some are so critical that exploiting them could lead to total compromise of machines and files, security experts say. But the way to eliminate such vulnerabilities isn't via

See Holes, page 8

CLEAR CHOICE
TESTS



Network configuration management

TrueControl from Rendition Networks wins our test of five network configuration management tools. DeviceAuthority Suite from AlterPoint gets high marks for its user interface. **Page 37.**

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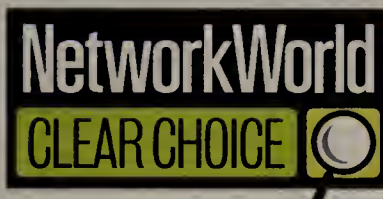
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TrueControl from Rendition Networks

TrueControl from Rendition Networks wins our Clear Choice Award in the network configuration management category for its excellent search, audit and reporting capabilities. **Page 37.**

NetworkWorld **SECTOR**

SPOTLIGHT

CONSUMER GOODS MANUFACTURERS

Packaged consumer goods manufacturers are turning to RFID tags to streamline their supply chains. **PAGE 40.**

NetworkWorldFusion

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Exclusive

Windows Media on Linux and Unix?

Multimedia Editor Jason Meserve says we could be looking at a hell-freezes-over scenario as Starbak says it will demo a new media player client that will let Linux and Solaris users watch Windows Media-encoded video on their desktops. **DocFinder: 1638**

Confessions of a cryptovirus fiend

Senior Editor Ellen Messmer looks at the new book *Malicious Cryptography: Exposing Cryptovirology*, which she says is a jolting reminder that a lot of damage is going to occur if computer virus writers and hackers ever start using encryption in a widespread way. **DocFinder: 1639**

WLAN Showdown

If you missed our weeklong event, it's all archived online. See WLAN switch vendors Airespace, Aruba, Chantry, Extreme, Symbol and Trapeze take on each other and answer questions from experts and readers. **DocFinder: 1640**

Seminars and events

Secrets of effective enterprise WANs revealed

How should your network support on-demand, automatic or grid computing? What's the best way to adopt Web-enabled and service-oriented applications? When should you separate and blend wireless and wireline? Attend "WANs: Survival of the Fittest . . . Fastest . . . Smartest," the new Network World Technology Tour event, and find out. **DocFinder: 1459**

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Columnists

Wireless Wizards

Can we improve client wireless transmissions? A wireless ISP asks the Wireless Wizards how they can solve its e-mail issues. **DocFinder: 1642**

Telework Beat

Utah program creates hundreds of rural IT jobs. Net.Worker Managing Editor Toni Kistner looks at Smart Site, which helps small firms expand by providing equipment, training. **DocFinder: 1643**

Small Business Tech

Testing fast wireless routers. Columnist James Gaskin says if you're still running an 802.11b network, now's a good time to upgrade. **DocFinder: 1644**

Home Base

Up and running. Columnist Steve Ulfelder on why business continuity is more important to you than it is to General Motors. **DocFinder: 1645**

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Aladdin Knowledge Systems' eToken Web Sign On stores your user names and passwords. **Page 26.**

News

Bits

FCC heats up rural wireless access

■ The FCC last week kicked off a process that might open more radio frequency spectrum for high-speed wireless services in rural parts of the country. The FCC proposed allowing unlicensed devices to operate in some or all of a frequency band between 3650 MHz and 3700 MHz, while also seeking comment on licensed use of the band or segmentation of the band for both types of use. Wireless ISPs want to use the spectrum to deliver broadband to individual customers and Internet gateways in sparsely populated areas, the FCC said. Either licensed or unlicensed users would have to avoid interference with fixed satellite service earth stations that use spectrum in that range, the FCC said, noting that those earth stations are primarily on the East and West coasts.

Offshoring twists and turns

■ Dell this week fanned the flames of the anti-offshoring movement, saying it now employs more workers overseas, 24,000, than it does in the U.S., 22,000. The country's No. 1 PC maker said it derived about 36% of its fiscal 2004 net revenue from international sales and that it recently set up technical and customer support operations in India, Panama, Slovakia, Morocco and China. Although Dell has come under fire along with other companies by critics who say that so-called offshoring is robbing U.S. citizens of jobs, the company's newly anointed CEO, Kevin Rollins, has said Dell will continue the practice. Rollins the company's current COO who is due to take the CEO position in coming months, recently said the issue of offshoring was "overblown." Meanwhile the backlash against offshoring continued to grow last week as Arizona Gov. Janet Napolitano banned the outsourcing of state jobs. The governor is upset that some 19,000 state welfare and food stamp calls were routed to call centers in India and Mexico, according to a United Press International report. Other states have similar provisions in the works.

Have money, will settle

■ Less than two weeks after settling its disputes with Sun, Microsoft last week reached an agreement with InterTrust Technologies to settle a case over InterTrust's

The Good The Bad The Ugly



Smut alert. The Federal Trade Commission last week said pornographic spam messages will have to include in their subject line a label reading "SEXUALLY-EXPLICIT." Only time will tell whether this rule, in effect as of May 19, will cut down on the number of these messages that are read or boost readership.



Schools under attack. The National Science Foundation says malicious hackers in recent weeks have infiltrated computer systems at universities that operate high-performance computer centers in the U.S. and other countries, leading to questions about the security of scientific research data. The identity of the hackers, who hijacked logons and slowed down systems through use of programs used to disguise themselves, has yet to be determined.



Spam bugs. Hidden code in e-mails increasingly is being used to track the success of unsolicited commercial e-mail campaigns, according to anti-spam technology company MX Logic. The vendor says up to half of all spam released in the last year has been bugged with "spam beacons" that send a coded message back to the sender whenever a spam message is opened. This helps spammers refine their distribution lists. ➤



digital rights management software. As part of the deal, Microsoft will pay \$440 million to InterTrust to license the company's patent portfolio. InterTrust will be given the right, under Microsoft-owned patents, to design and publish DRM and security technical specifications, Microsoft said. Microsoft received rights to use InterTrust's technology for the life of its patents, around 20 years, Microsoft said. Customers are covered, as are content providers that use Microsoft technology to protect content, the company said.

You say Windows, I say Linspire

■ Embattled Linux-based software vendor Lindows.com formally changed the name of its desktop operating system from LindowsOS to Linspire last week after a two-year trademark dispute with Microsoft. The company said it renamed its product to end Microsoft's international legal attacks. Microsoft has sued Lindows.com for trademark infringement in several countries over the similarity between the Windows and Lindows names.

That's a lot of Trojans

■ In a disconcerting note, ISP EarthLink and privacy software vendor Webroot Software released a report last week that said Trojan horse or system-monitoring programs were found on more than 30% of all Internet-connected systems scanned, raising fears of identity theft. The study also found an average of almost 28 spyware programs are running on Internet-connected PCs. The report presents the results of scans of more than 1 million Internet-connected computers. In particular, the detection of more than 184,000 Trojan horse programs on the systems scanned and a similar number of system-monitoring programs, such as key-logging software, underscore the potential for identity theft and system compromise for Internet users. Many of the 29 million spyware programs found were harmless "adware" programs that display advertising banners or track Web surfing behaviors. However, the companies also found more than 300,000 instances of programs that can steal personal information or provide unauthorized access to computers (for more on malware see Mark Gibbs' column, page 58).

"... and then we stick it in Larry Ellison's mailbox!"

Layer 8

Thanks to the above caption, Leo Sopicki of Rancho Cucamonga, Calif., was the winner of our latest Caption Contest. Next week, it could be you.

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Opteron gains respect, challenges remain

■ BY JENNIFER MEARS

Advanced Micro Devices has shaken up the server industry in the year since it introduced its 32-/64-bit Opteron chip, opening the world of 64-bit computing to business users looking for expanded performance, but with industry-standard pricing.

On Thursday, AMD will play host at an event in New York celebrating the one-year anniversary of Opteron, which lets users run 32- and 64-bit applications on the same platform.

The chip has been widely embraced, and all major systems vendors — except Dell — have shipped products based on the

processor, helping AMD's financial picture. Last week, the company reported first-quarter sales of \$1.2 billion, up 73% compared with the same quarter last year. Net income for the quarter was \$45 million, compared with a net loss of \$146 million last year.

By forging partnerships with HP, IBM and Sun, AMD has put pressure on Intel, which until now faced almost no competition in the high-volume, low-end of the server market, where it holds about a 98% share, according to IDC. In February, Intel announced that it, too, would roll out 64-bit extension technology, called Intel Extended Memory 64 Technology (EM64T), for its x86 processors.

Intel says a dual-processor Xeon with EM64T technology, code-named Nocona, will debut in the next few months. Intel's MP Xeon for multiprocessor servers would get the extension technology in 2005.

The AMD/Intel competition "is going to make the technology race a lot more aggressive, as well as likely result in more competitive pricing for customers," says Jamie Gruener, a senior analyst with The Yankee Group. "But customers will really have to do their homework to determine which platform is best for the application they're trying to run."

For AMD, the biggest challenge will be to continue enhancing Opteron for enterprise use, which means looking beyond processor speed improvements to designing chipsets that provide more reliability and management capabilities that corporate users demand.

It's this system-focused perspective that may give Intel the edge once Nocona-based systems start rolling out. Dell, HP and IBM have said they will use Nocona.

"Intel has been focusing consistently not only on chip design, but also focusing on elements around the chip: the chipset, architecting the management better, system health. They've done a lot of work to improve the server platform in the last couple of iterations of their chips," Gruener says. "While AMD has done a good job of designing a really [high-performance] platform, there is a lot more that has to go into it."

Still, the systems vendors continue to roll out Opteron-based products. This week HP is expected to announce shipment of the four-

Road ahead

AMD celebrates the first anniversary of its Opteron processor with Sun, HP and IBM all offering servers based on the 32-/64-bit chip. Now Intel is about to get into the game.

Challenges:

- Intel plans to roll out EM64T, giving Xeon 64-bit capabilities, in the next few months.
- AMD needs to look beyond processor speeds and work with OEMs to improve management and system health technology.
- AMD must be clear about the differences between the two offerings, or customers may opt for Intel because it's a name they know better.

Strategies:

- AMD is portraying the Intel threat as good for the technology, saying it further validates Opteron.
- AMD says more low-power options, blade and four-way configurations, better-performing processors and more application support are just some of the areas where it's focusing.
- Unlike Intel, AMD embeds its memory controller into the chip and also uses HyperTransport technology to transfer I/O requests between processors.

way, \$8,300, Opteron-based DL 585 it introduced in February. The company is already shipping the two-processor Opteron-based DL 145. HP also is expected this week to announce a new Linux-based cluster that uses DL 145 boxes.

Meanwhile Sun is expected to announce a pre-tested hardware and software bundle for secure Web serving, which includes its Opteron-based v20z, Java Web Server and Solaris operating system.

Opteron and Intel's EM64T might end up slowing adoption of Intel's 64-bit Itanium, at least on the low end, analysts say. While Opteron and EM64T are not positioned to compete against Itanium, which offers higher-end RISC-like performance, most analysts and industry observers agree that the swell of support around Opteron is what forced Intel to introduce EM64T.

"To a degree that there wasn't a real alternative, I believe Intel would have just continued to plug Itanium until Itanium won by default," says Gordon Haff, an analyst at Illuminata. "Certainly, there would have been other potential dark horses like IBM Power. But Opteron lent a certain urgency to Intel to counter, lest they potentially lose a chunk of the market."

The market is clearly there. According to IDC, about 35,000

Opteron-based systems shipped in 2003 after AMD introduced the chip on April 22, compared with about 19,000 Itanium systems for Intel for all of 2003.

"I don't want to come off saying this is an Itanium killer, because I don't think it is," says John Enck, a research vice president at Gartner. "But certainly it creates barriers for Itanium to move into this high-volume market.... Intel wanted to speed up the transition from Xeon to Itanium. By being forced into expanding the Xeon technology, that obviously has a slowing effect on Itanium adoption in the high-volume market."

"One of the largest roadblocks for migrating to a 64-bit architecture system is running all the 32-bit applications that we have a considerable investment in," says Wade Phillips, technology and IS manager at Shakopee School District in Minnesota. "From a public education perspective, it would be nearly impossible to implement 64-bit computing without stepped migration where we can run both types of applications." ■

NetworkWorld's Who Wants to be an Entrepreneur?

Get in the running with *Network World's* contest for IT professionals.

When you see those announcements about millions of dollars in venture capital being awarded to one start-up or another, have you ever thought to yourself, "Hey, what about me? What about my idea?" After all, professionals like you are the ones who know what products and services are needed to solve real world problems.

Well, now is your chance. Introducing *Network World's* "Who Wants to be an Entrepreneur?" contest, which will recognize the best idea for a new product, service or company. The contest, developed by Network World in conjunction with Commonwealth Capital, a venture capital firm in Wellesley, Mass., is sponsored by public relations firm fama PR of Cambridge, Mass., service provider Qwest Communications of Denver and the law firm of Testa, Hurwitz & Thibault LLP of Boston.

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- Visit www.nwfusion.com (DocFinder: 1631) to access the entry form, which must be filled out and returned by midnight May 17.
- A panel of judges will whittle down the entries to three to five finalists, basing their decisions on the submissions' originality, value and relevance to the network industry. Judges include Network World editors as well as representatives from Commonwealth Capital, Gold Wire Technology, North Bridge Venture Partners, Sigma Partners and Testa, Hurwitz & Thibault.
- Arrangements will be made for finalists to make a more detailed pitch to the judging panel.
- The winner will be told by June 21 and announced in the June 28 issue of *Network World*.

So do you want to be an entrepreneur? Here's your chance to take a shot.

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Users ponder Microsoft security plans

■ BY JOHN FONTANA

DENVER — Microsoft should retrofit older software with new security enhancements it plans to release later this year and add more support and better reporting features to its forthcoming patch-management tools, according to users attending at a stop on the company's current 20-city Security Summit road show.

End users say older versions of software they run, especially Windows 98 and 2000 and server software such as Exchange and SQL Server, would benefit from new security tools Microsoft is developing. Those tools include the Internet Connection Firewall (ICF) on the desktop and automated patch-management tools for servers and desktops, both of which are set for delivery no later than June 30 when Microsoft ships Windows XP Service Pack 2

and Windows Update Services (WUS), respectively. In addition, users say WUS, a free server-based application for downloading and deploying patches, also would benefit from more sophisticated reporting tools that detail patch installations.

Users have made these suggestions because ICF isn't compatible with operating systems released before XPWUS initially will only support Windows XP Professional, Win 2000, Windows Server 2003, Office XP/Office 2003, SQL Server 2000, MSDE 2000, and Exchange 2003. Microsoft will only say other software will be added over time.

Some users are caught in a deployment conundrum.

"We can't implement what is available. Microsoft is addressing our security needs, but we're not able to take advantage of it right now," said Jeff Rachwitz, network

engineer for Harrison School District 2 in Colorado Springs. "We can't automatically deploy patches to our Windows 98 desktops with WUS."

That means half of the districts 3,000 desktops, which are spread

out over 21 schools, have to be patched individually, as new patches are released. The district can't upgrade those desktops because its educational applications won't run on XP.

The district has been able to

upgrade the other half of its desktops to XP to take advantage of welcomed security features, including ICF and the predecessor to WUS, Software Update Services 1.0, but now those

See Summit, page 10

Security slate

Microsoft this year plans to introduce a number of security upgrades to its software, including enhancements to its desktop operating system and patch-management tools.

Tool	Release	Description
Windows XP Service Pack 2	No later than June 30	Includes personal firewall and other upgrades that lock down vulnerable operating system services by default.
Internet Security and Acceleration Firewall 2004	No later than June 30	Firewall for perimeter security includes URL scanning, new configuration and access control tools.
Windows Server 2003 Service Pack 1	Second half of this year	Includes Security Configuration Wizard, roles-based administration tool to configure server and lock down ports and services.
Windows Update Services	Second half of this year	Free server-based application for downloading and deploying patches.

Holes

continued from page 1

patches, but in creating tools and processes for building more secure code and weeding out problems in the development phase.

It's a problem that bedevils not only Microsoft but any large company that writes its own applications or source code. Many organizations try to stomp bugs by having the chief software architect and programmers work in a formal process with the security manager's staff as part of the code-evaluation process, says Steve Orrin, CTO at Sanctum.

Gathering dust

Although companies often make an effort to train developers about problems such as buffer overflows, Orrin says, the corporate policy ideas contained in written secure-coding practices "usually sit on a shelf gathering dust." The pressure to get product out the door sometimes means the code review isn't as thorough as it could be.

Michael Howard, Microsoft's senior program manager in the security business and technologies unit, last week refuted any suggestion that Microsoft ships any product before thorough security-based code evaluation.

"We've delayed products such as Windows Server 2003 for nine months because of security

issues," says Howard, whose job is to foster expertise among Microsoft programmers through a continuing education process and what he describes as a "buddy system" that teams security experts with programmers.

But Microsoft only has about a

dozen of these security specialists to interact with about 20,000 software engineers. Howard says Microsoft is looking at doing more online training to be able to "scale" the process.

Redmond makes use of home-grown code-review tools, including the desktop-based Prefix for static code review and Prefast that runs on servers. Prefast eventually might be added to Microsoft's Visual Basic development tool. Microsoft also sometimes turns to outside firms — eEye Digital Security is one — for independent review of products.

In fact, eEye Digital Security months ago uncovered several of the most-critical vulnerabilities that Microsoft identified last week. But eEye COO Firas Raouf says word of the vulnerabilities was kept quiet until a patch could be devised.

EEye Digital Security, which sells vulnerability scanners and will soon announce a host-based intrusion-prevention product, relies on crack-shot bug-hunters and tools developed in-house to pinpoint hard-to-see flaws in software.

Raouf adds that the firm sometimes has contests to see which team of researchers can find security holes and fix them. "At the end of the contest, they might win a trip to Hawaii or a laptop," he says, adding eEye also will hire outside evaluators, such as Neohapsis, to check eEye products.

Much security review remains manual — and might be more art than science — though automated tools for application and source-code analysis are becoming more available. Freeware tools, such as Splint or the Rough Auditing Tool for Security ("Rats") maintained by Secure Software, also can be of help.

Getting automated

HB Gary's BugScan, as well as Parasoft's Automated Error Prevention software tool, released earlier this year for uncovering security-related mistakes related to SQL and buffer overflows in the C and C++ coding process, are part of the trend toward automated security code reviews. Spi Dynamics and Sanctum each recently began offering their Web security-test tools integrated into Mercury Interactive's Test Director quality-assurance test tool.

Start-ups in the area are proliferating.

Last month a company named Reasoning began offering a "bug-identification service" for analyzing source code for security flaws. Earlier this month, start-up Fortify Software introduced its Source Code Analyzer Server, a \$50,000 per CPU software package that C, C++ and Java developers can use to detect weaknesses in their nightly builds of code.

Fortify also offers a \$25,000 tool called Red Team Workbench for Windows and Linux servers that

can help security specialists check for exploits aimed at Web applications and XML-based Web services.

Finally, start-up Ounce Labs next month May plans to ship Prexis, a tool designed for use by CIOs and chief security officers to evaluate C or C++ source code that developers produce.

"This is a tool for those with responsibility for understanding where risks are," says Jack Danahy, president and CEO of Ounce Labs. The company says that Prexis, which starts at \$50,000, is said to run at compiler speed to evaluate applications for security risks, presenting the information as "V-Density" reports of vulnerabilities that need to be addressed.

While Microsoft last week had a lot of explaining to do, anyone who thinks its operating systems are worse in terms of vulnerabilities than say, Linux, is going to be surprised by a report that security expert Stuart McClure, president and CTO at security products vendor Foundstone, will publish next month.

In his apples-to-apples study comparing the history of flaws discovered in several versions of Linux to Microsoft software, McClure says, "Linux is worse" with about 10% more flaws uncovered. ■

Windows weaknesses

Microsoft identified 14 vulnerabilities in its Windows XP, NT, 2003, 2000 and 98 products last week. Here are the most critical ones:

Windows Local Security Authority Service Server

- Flaw permits attacker to completely compromise system.

Secure Sockets Layer

- Attacker can launch denial-of-service attack.

ASN.1 vulnerability

- Permits remote-execution of code.

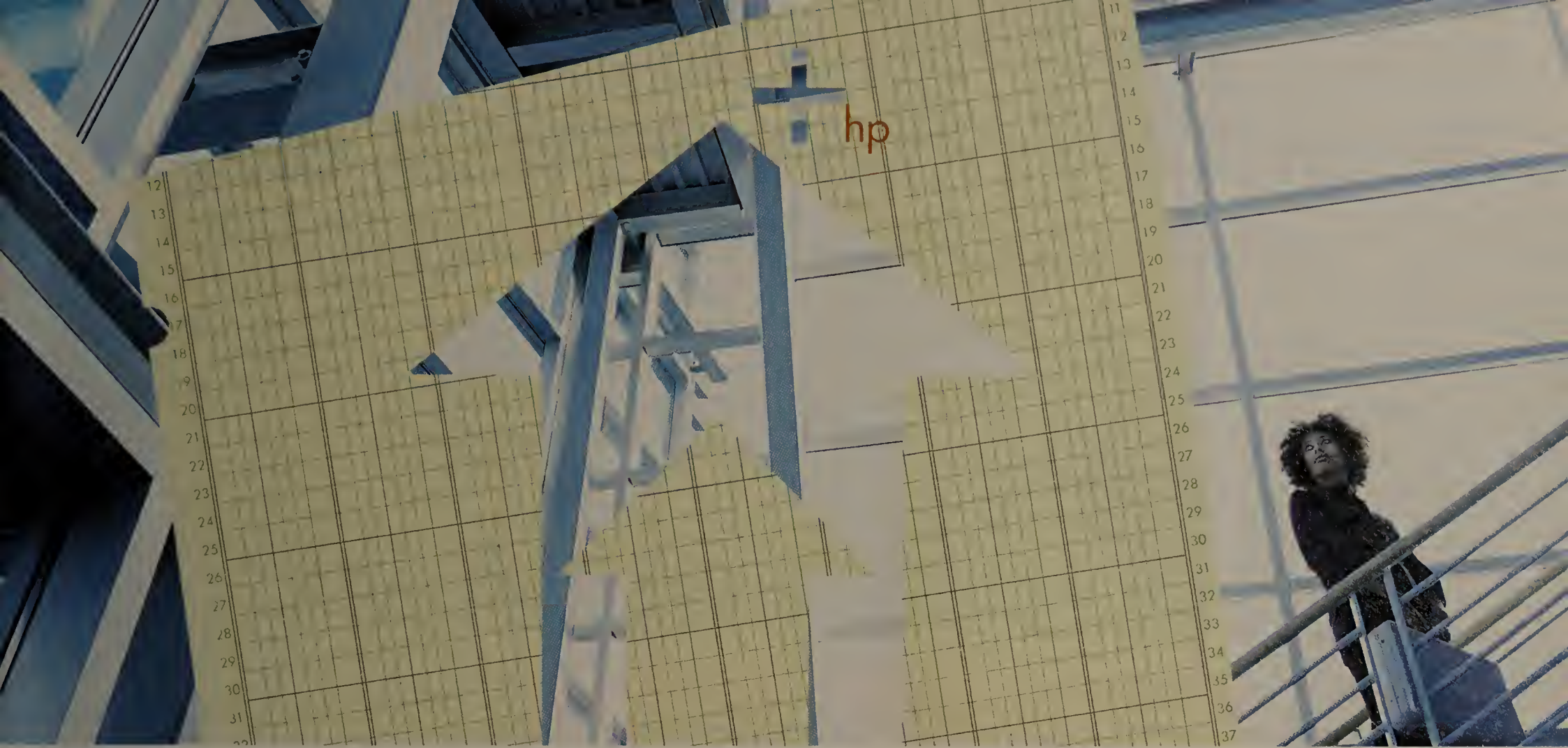
Windows DCOM/Remote Procedure Call

- Attack could cause denial of service or possibly execution of arbitrary code with System privileges.

For more information, see www.microsoft.com/technet/default.mspx and www.cert.org.



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Mendocino revives continuous data

■ BY DENI CONNOR

Storage start-up Mendocino Software isn't focusing on backing up data — instead, it wants to let users instantly recover applications and data, while maintaining the integrity of their transactions.

Competitors such as Revivio and TimeSpring focus only on recovering data.

Mendocino's software — called RealTime — will recover applications such as PeopleSoft, Oracle or SAP and maintain the integrity of their transactions. The company says it hopes to meld the software it acquired from defunct recovery start-up Vyant Technology with the native transaction rollback mechanisms of these database applications.

Analysts say this is a smart strategy.

"Mendocino is approaching this

from the data level, really working to link application health to the storage environment," says Jamie Gruener, a senior analyst with The Yankee Group. "Lots of software will recover the data sets, but understanding how those data sets relate to the application is crucial."

Mendocino's host-based software, which runs on Solaris and AIX servers, lets users instantly recover data and continue their operations uninterrupted.

"It has a GUI with a time-slide on it that lets you roll back transactions to any point in time," says Dan Kinne, vice president of IT for the Silver State Schools Credit Union in Las Vegas.

"Before using RealTime it could take us hours to days to recover data," Kinne says. "In most cases we would have to restore back to our previous close of day and recover for-

ward. Thirty-two percent of our customers are active Internet banking users and Vegas is a 24-hour town, so you always need to be available."

With Mendocino's RealTime software all changes to an application are recorded and time-stamped as they are written to disk. If the application fails, the software can rewind it to the closest minute before the failure. This is unlike traditional backup and recovery, replication or snapshot backups, which are limited by the frequency a customer uses them to back up the network. RealTime restores data by rewinding the previously queued data until it has moved beyond the system crash point.

"Customers have a server with a critical application running on it, and they need to be sure that server can be recovered as quickly as possible to the point in time closest to when it failed," says Chris Eidler, vice president of product operations.

Observers will ask why anyone would expect Mendocino to succeed when Vyant didn't. John Wernke, vice president of marketing for Mendocino, says there are two reasons.

PROFILE: MENDOCINO SOFTWARE	
Location:	Fremont, Calif.
Founded:	March 2003
Primary product:	RealTime Instant database recovery software
Cost:	\$65,000 per terabyte protected
Management:	Peter Levine, CEO; Steven Colman, president and COO; Jeff Rothschild, CTO. All were previously with Veritas Software.
Funding:	\$15 million from Mayfield, Accel Partners, Advent International and Foundation Capital.
Fun fact:	One Mendocino software architect keeps a cattle prod in the office to motivate employees to meet deadlines.

"When you look at Vyant, they had awesome capabilities to produce intellectual property but never had the business savvy, the distribution and the partnerships that make a company successful," Wernke says. "You also have analysts saying that 2004-2005 is the right time for recovery technologies and disk-based backup."

Gartner indicates that back-up products increasingly will manage data based on recovery-time objectives. Further, the firm esti-

mates that by 2007, more than 50% of data will be recovered from disk, up from 5% of data recovered from disk today.

"My concern is less with the technology than it is with the fact that this company is a start-up," says Mike Karp, a senior analyst for Enterprise Management Associates.

Wernke says Mendocino counts 10 companies as its customers. Among them is long-distance provider Startec Global Communications. ■

Summit

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machines can't run the educational applications.

The presentation in Denver drew 900 people, who attended daylong seminars after receiving a summary of current tools and a review of Microsoft's security road map from Richard Kaplan, who last week was appointed corporate vice president for business development marketing and emergency response in Microsoft's Security Business Unit.

Kaplan said Microsoft will evaluate adding security features in XP SP2 to older operating systems, but he said, "We have no commitments yet."

Despite calls for some changes, most users say it's about time Microsoft made the commitment to secure its software and applauded the company's ongoing efforts, which began in earnest two years ago with its Trustworthy Computing initiative.

"Windows has always been designed to be easy to use; now they have to make up for lost time," said Michael Henry, a developer with Manakoa Service Group in Boulder, Colo., which develops software for risk management and regulatory compliance. Henry said that ease of use fuels security problems with Microsoft software. "In time they will improve," said Henry, adding that Manakoa will take advantage of the new security features in its future tools.

However, Microsoft did not hear encouragement from everyone.

"Things are sure to get worse before they get better because hackers have seen Microsoft's weaknesses, and they continue to exploit them," said Ray Haschenburger, president of Alternative Computers in Denver, an IT contractor to government organizations. "Users are getting close to the attitude of 'fix it or get off the pot.'"

Haschenburger said he already sees Linux creeping into government organizations for security and reliability reasons. "Years ago complaints about daily patches for HP-UX hurt HP, and the same scenario is hurting Microsoft now," he said. "They are running scared because this [Denver security summit] is packed with people looking for better security."

Roberta Bragg, an independent computer security evangelist who spoke at the summit in Denver, said evaluating Microsoft's job on security has to take into account all the products they have. "Microsoft is doing a tremendous job, but they have a long way to go," she said.

Bragg said Microsoft can't escape accountability for all its products, but that other vendors, IT administrators and end users must all play a part in securing a network environment. ■

Netifice to unwrap VPN service

■ BY DENISE PAPPALARDO

Netifice Communications is expected to announce this week an upgraded VPN service that eliminates the need for customers to install concentrators at their sites.

The company's Network-based IPSec VPN service goes beyond to Netifice's current VPN offering, which requires customer premises equipment (CPE) to be deployed at each customer site.

Netifice has upgraded its Cisco 7206 Provider Edge routers with new software and cards to support its new fully managed service.

The service provider has Cisco routers deployed in all its 32 points of presence across the country. The dollar amount the service provider has invested in the upgrades is not publicly available, says Greg Davis, vice president of marketing and product management at Netifice.

The Leather Factory has deployed Netifice's Network-based IPSec VPN service to connect all 52 of its retail stores, says Steven Stratton, IT manager at the national retail chain.

The retailer took bids from AT&T, Qwest, Broadwing, MCI, Sprint and Netifice, but Stratton says Netifice was the only carrier willing to mix a variety of DSL speeds and access technologies such as cable, satellite and dedicated T-1 to the same VPN. "It was one of the key reasons why we

chose Netifice," he says.

Netifice is not the first to offer a network-based VPN. Many of its competitors, including AT&T, Sprint and MCI, offer such a service. But the service provider does claim to offer users a cost advantage.

The company is charging \$30 per month, per site, for its Network-based IPSec VPN service on top of a user's standard access fees. Users can expect to "save about one-third off of what they paid" for CPE-based VPN services from most providers, Davis says.

Netifice customers typically will pay about \$150 per month, which includes the VPN service fee, for the VPN service with a symmetric DSL, asymmetric DSL line or satellite connectivity through Netifice partner Hughes Network Systems, Davis says.

Netifice works with a dozen DSL service providers and a handful of other carriers, including New Edge Networks and AT&T, to offer dedicated T-1 and frame relay access to its network. T-1 or frame relay VPN connectivity can cost up to \$400 per month, per site, for both access and VPN service.

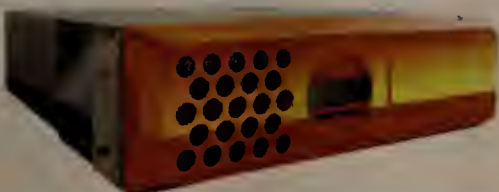
The company also offers users service-level agreements (SLA) that cover its last-mile partner networks. The standard SLA guarantees 99.9% network availability, round-trip network latency that does not exceed 160 millisecond and packet delivery that does not fall below 99.7%. ■

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Cisco

continued from page 1

the Internetwork Operating System (IOS) improvements were a long time coming, while others contend that such an architectural change could engender a new set of network problems for router administrators.

Mike Volpi, senior vice president of Cisco's Routing Technology Group, outlined the IOS plans last week during an interview with *Network World* editors.

"Modularity means you have the ability to partition," Volpi said. "So you have a real-time kernel that runs underneath it, rather than the classic embedded kernel of IOS." This partitioning will make the operating system more reliable by reducing downtime because of bug fixes, feature additions, upgrades or unplanned events, he said.

Versions of IOS run on almost all Cisco equipment, from small-office to carrier-class routers and the company's Catalyst enterprise switches, security appliances and Wi-Fi gear.

The software's current architecture is tightly bundled, even monolithic, experts say. IOS includes a base software image with embedded features that are compiled for specific builds to perform certain tasks — from IP and legacy protocol support to firewalling and VoIP.

"To put a feature on a router, you can't just add the little pieces you want," says James Boney, author of the book *Cisco IOS In A Nutshell*. "You have to upload a whole new IOS version and then reboot," he says. "If

you get it wrong, you have to do it over."

Even though IOS is still monolithic, Volpi said the software has become more partitioned over the last few years. Chunks of feature code are now separated, so they don't interfere with each other or with core routing functions.

While an entire IOS image still must be loaded during feature upgrades, the partitioning has set the stage for the new modular IOS architecture.

"Most of the newer [IOS feature] modules have been reasonably well partitioned off already," Volpi says. "They may not have the Posix-like API, [similar] to a Unix operating system, but those are relatively easy to add because we designed it with that modularity in mind."

He adds Cisco also will continue to support IOS as it exists today.

A modular IOS is something Cisco has been cooking for years, says Frank Dzubeck, president of consulting firm Communications Network Architects.

"It's going to be an improvement, in that it will be extremely more stable in the long run," Dzubeck says. It also could help users deploy IOS-based gear faster in large networks. Before new IOS builds are put on live networks today "a lot of regression testing has to be done, which can take months because you might turn on one option that affects others," he says.

Anticipated Cisco's move

Corporate users say they've anticipated the move by Cisco and are eager to see the code.

"At a high level, we've heard about this"

the fourth quarter from 66% to 62%, while Juniper's rose 3% to 31%, according to Dell'Oro Group.

Juniper has been selling its high-end router, the 640G bit/sec T640, for about two years and has beaten Cisco out on some key contracts. This includes the core router piece of the huge Global Information Grid - Bandwidth Expansion network, which the U.S. Department of Defense Information Systems Agency is building.

"It's tough. We wish we would have won it," Volpi said. "We're doing a lot of things to shore ourselves up and try to minimize how much Juniper gear they actually buy. Over time as we introduce newer devices, we'll probably have an interesting opportunity to reopen that whole discussion."

Meanwhile, the market for core routing is heating up. It grew 22% in 2003 from 2002 and is expected to rise another 31% this year, according to Dell'Oro.

Demand isn't currently seen as being huge for OC-768c packet-over-SONET, although some of the world's largest service providers are requesting the technology. "With the exception of a few critical POPs, by and large 10G [trunks] are certainly plenty," Volpi says.

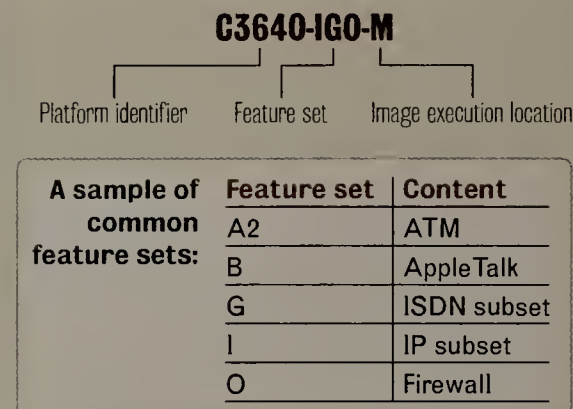
"Cisco's planning for the level of demand now — current demand is nonexistent," says Mark Bieberich, an analyst at The Yankee Group. ■

IOS overhaul

Cisco says its device software will be more modular in the future.

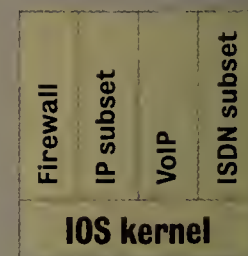
Features on IOS images today are bundled into unique builds of the software, often requiring the entire image to be loaded to install a new feature:

IOS image example for a Cisco 3640 router:



SOURCE: CISCO IOS IN A NUTSHELL BY JAMES BONEY

Cisco is proposing a modular architecture overhaul to IOS, in which features would run in partitions and could be added on top of an underlying IOS kernel:



IOS change, says Dick Emford, lead network analyst for plastics manufacturer Newell Rubbermaid of Freeport, Ill. "It sounds like a great idea."

Emford says whittling down the myriad IOS versions to a few core software builds is a chore for his network staff, which manages more than 1,000 IOS-based devices across Newell Rubbermaid's WAN and LANs.

"It would be great to get more granularity with IOS, so you could pick functions you want to support at a site and load only those," Emford says. "IOS is so big, and there is so much functionality in there that people don't need anymore. There are a lot of services [in IOS code] that just sit there taking up memory."

"A modular IOS is something we've been inquiring about," says Dave Wiltzius, network division leader at Lawrence Livermore National Laboratory, a U.S. Department of Energy research facility in Livermore, Calif.

He points out that Cisco is not the first major network vendor to move toward modularizing its operating system. Extreme Networks in December launched its Unix-based ExtremeWare XOS operating system for its BlackDiamond 10K core switch. The device runs on an open source Unix kernel with modules — such as security, routing and redundancy protocols — that can be turned on and off while the switch stays online. Wiltzius tested the Extreme BlackDiamond 10K recently in a lab.

"We were kind of surprised at how much we really liked that capability," Wiltzius says. "It really was not as painful a process to fine-tune the software environment [on the switch] to match what we needed," compared with the process of fine-tuning an IOS image for a specific task.

Wiltzius says plans to deploy the Extreme box in production were stalled for budget reasons. However, the ExtremeWare XOS-type of functionality in IOS would be helpful because Lawrence Livermore is predominantly a Cisco shop, he says.

With Cisco gear carrying

about 80% of the world's Internet traffic, a modularized IOS could help carriers run the 'Net more efficiently, analysts say.

Modular operating systems "are increasingly important as carriers consolidate [point of presence] architectures," says Mark Bieberich, an analyst at The Yankee Group. With the new functionality "a carrier could partition a router to perform core functions — such as aggregation, peering and treatment of [Multi-protocol Label Switching] VPNs — in one physical system."

Bieberich says this treatment usually requires separate and distinct physical devices. As such, modular operating systems could lead to "tremendous reductions in operating costs" by cutting the number of devices, and trunks and links between devices.

While the proposed IOS overhaul will be useful, drawbacks might surface, analysts say.

"Any new software, even minor upgrades, always have issues," says David Newman, president of Network Test, a network equipment evaluation firm, and a Network World Lab Alliance member. "Getting people to adopt it might also be an issue. For many enterprises, it might be akin to upgrading a jet engine in mid-flight."

Dzubeck adds that if IOS is made more Unix-like, "there could be situations where a module could be added that would open up a hole. You didn't have that before in IOS because it was totally closed."

Ironically, some IOS security issues have cropped up recently. Reports have surfaced that hacker tools, built to exploit known weaknesses in certain wired and wireless Cisco gear, now are circulating the Internet.

Volpi says this doesn't expose any fundamental flaw in Cisco technology nor does it represent a great threat to users.

"So far, we've shown to be pretty robust, and there are no major issues that at least we know of," he said. "Being an embedded operating system that sits in a router, [we] don't quite get the attention that a Windows does with a community of hackers." ■

Router

continued from page 1

featuring a modular version of IOS will be on display in mid-June at the annual Supercomm telecom conference in Chicago.

"It will be there, I'm quite certain," he said of what will become the company's top-of-the-line system.

Though details remain sketchy, the so-called HFR will be a single rack, 16-slot router with single-port OC-768c modules, making Cisco perhaps the first to unveil the new high-speed interfaces on a core router. Cisco offers dual-port 20G bit/sec OC-192c blades for its "40G bit/sec per slot capable" 12816 router, which is the company's current high-end offering.

The HFR is expected to support at least 640G bit/sec of system capacity, though be scalable to multiterabits via chassis interconnection.

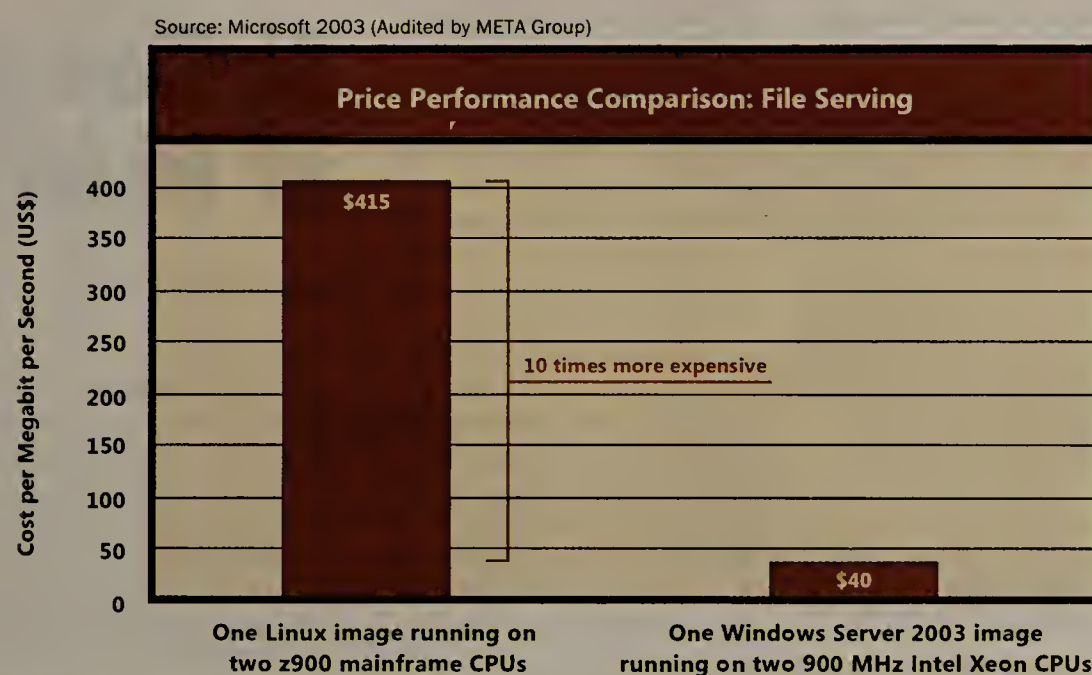
Also, in supporting the new modular IOS, Cisco says the product will protect different router features by placing them in separate compartments. Juniper and Procket Networks say they offer such capabilities in their routers.

For Cisco, the stakes are high as it introduces its new system. The company's share of the high-end router market slipped in



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Cinemas

continued from page 1

costs for studios; estimates range from 50% to 90% off the \$1 billion spent annually now. In addition, supporters say it will result in new revenue streams for theater owners and provide crisper, clearer movies.

It also will create IT jobs.

There are more than 35,700 movie screens in the U.S. at 6,000-plus cinemas — most of which have no networks to speak of, says John Fithian, president of the National Association of Theater Owners.

"Some have a computer hooked up to a slow dial-up line, and some don't even have the computer," Fithian says. At one end of the spectrum are large chains such as Regal Entertainment Group, which owns 6,000 screens and is the furthest along with its network build-out. But there are many "mom and pop" cinemas with two or three screens in small towns that "don't even have e-mail addresses," he says.

Digital cinema technology promises to change much of that over the next few years. At a minimum, each theater owner will have to deploy a server to decrypt and recombine film package elements it receives from a satellite or fiber connection. That server will send film files over the theater's LAN to digital cinema projectors, which will show the movies.

That's a far cry from the way movies are distributed today — copied on celluloid, put on reels, dropped in cans and physically delivered to theaters. These copies are never of the same quality as the master version, and typically become dam-



Charles Schwartz, executive director of the Digital Cinema Lab, is shown with a Christie M15 Digital Cinema Projector.

aged, scratched and dirty after weeks of showings.

A sneak peek

Regal, the largest theater chain in the U.S., has had lots of practice with digital content and networks. In 2002 it started developing its digital network, not to support film but for advertising, pre-show entertainment and alternate shows such as rock concerts and corporate training. Regal says it plans to use the network, called the Digital Content Network (DCN), to support digital cinema for movies.

The DCN is part of Regal CineMedia, a wholly owned subsidiary of Regal, and is overseen by Tom Galley, executive vice president and CTO at Regal CineMedia.

Galley spent the past two years completing the design, testing, development and installation of the network. Having a background in IT, Galley says he is still learning about "the popcorn and the movies and all that."

He was the first employee on the project. Since then he's added about 150 people to his staff, which includes creative, post-production and special-events folks. About 50 people are operations staff, who handle the digital network, which includes networks in each theater that are monitored from an operations center in Centennial, Colo. With nearly \$72 million spent, the work on the network is nearly complete, Galley says.

"By the first of July we'll have about 5,000 screens and a little over 400 theaters online," he says. Using satellite multicasting services from Hughes Network Systems, his team distributes content to Regal theaters across the country.

After such a big investment, you might think Regal would be ready for digital cinema, but standards and equipment interoperability work remains.

There are two primary standards groups that will let the film industry move to digital technology. These groups are the Society of Motion Picture and Television Engineers (SMPTE) and the Digital Cinema Initiative (DCI), a consortium of the seven largest studios, including Disney and Warner Bros. These groups also are talking with international organizations to ensure that digital cinema standards are adopted worldwide.

SMPTE and the DCI are working with the third version of the digital cinema standard draft and are testing products at the Digital Cinema Lab, which was formed in 2000 at the University of Southern California's Entertainment Technology Center in Hollywood.

The groups have agreed on things such as how digital files will be packaged and delivered, which include a hybrid approach of satellite and broadband services. There also is the option of shipping the files on a physical disk, especially as back-up systems.

The standards bodies still are hashing out some issues, such as whether encrypted files should be decoded in new digital projectors or at a secure server. The Motion Picture Association of America says the industry loses more than \$3 billion a year because of piracy.

"Encryption of digital files will go a long way to prevent pirates from getting their hands on the motion picture," says Charles Schwartz, executive director of

the Digital Cinema Lab.

Another unresolved issue is creating a business model that works. It's still not clear who will pay for the expensive digital cinema network and equipment upgrades required at cinemas. Fithian says theater owners and the DCI are working to come up with a business model that could include being subsidized from sources to be determined.

Fithian says today it costs the studios \$1,000 to \$1,500 to produce one copy of one film and drop it in a can for distribution. "A digital copy will cost less than \$100," he says.

But the cost of moving to digital cinema is going to be great. For a large chain such as Regal, upgrading to digital cinema projectors will cost at least \$450 million, as the projectors are three to five times more expensive than 35mm systems, according to industry estimates. That translates to a \$2.65 billion upgrade for digital cinema pro-

jectors for theater owners across the country. And these figures do not cover the cost of servers, network gear or IT staff.

Supporters of digital cinema say this is a crucial year for making the move to the new system. The standard is expected to be finalized later this year and early adopters will likely start rolling out gear soon after. But change in any industry doesn't happen quickly.

"It will take years to make this happen," Fithian says. "But there's light at the end of the tunnel." ■

Got great ideas

■ *Network World* is looking for more Wider Net stories. If you have a story idea about an offbeat network industry-related topic or a fascinating personality we should profile, contact Bob Brown at bbrown@nww.com.

AirFlow backs out of WLAN switches

■ BY JOHN COX

AirFlow Networks' decision last week to scrap its wireless LAN switch might be the first tremor in an expected shakeout of this market.

The company, which launched its switch last September, decided it would be too expensive, and too risky, to compete with a flock of other similar start-ups. Instead, it will try to license its software to its former rivals, as well as to Ethernet switch vendors and WLAN chip makers.

"If we were going to maintain a systems business, we'd have to build out an international sales organization, spend money on marketing, staff up technical support, and spend money trying to duplicate all the features and functions that a dozen other vendors have," says Brian Jenkins, AirFlow's vice president of marketing.

Aaron Vance, a senior analyst with Synergy Research Group, says the move makes sense and should enable AirFlow to better exploit its VoIP over WLAN and other intellectual property.

"There's going to be some consolidation," Vance says. "The market is just not going to be able to support all of these companies."

Because most are privately held and reveal few financial or other numbers, it's difficult to get a read on the financial health of the WLAN switch vendors. WLAN switches made their debut last year, but researchers have been frustrated in getting shipment numbers, leading to suspicions on their part that not many units are being bought.

"I've sent surveys out to the WLAN switch guys for the last few quarters, with only Symbol and Aruba agreeing to report," says Gemma Paulo, senior analyst with In-Stat/MDR. Symbol, which is publicly held company, reported shipping 3,200 switch units in the fourth quarter of 2003, up from 2,145 in the third quarter. Aruba said it shipped 176 units in the fourth quarter, up from 74 in the third.

Cisco doesn't actually sell a WLAN switch, but is considered the dominate player in enterprise WLANs given its 36% to 45% share of the high-end access point market in the latter half of last year, according to Synergy. Plus, Cisco plans to enable its traditional switches to handle wireless traffic. Extreme Networks, Foundry Networks and other established switch makers have already done this. ■



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- According to Forrester Research, AT&T is the best in the VPN business with a future-proof global VPN architecture. — Choosing The Right VPN, Forrester Research, Inc., March 2003
- IDC Rated AT&T top of all U.S. IP VPN managed carriers for market share and market leadership.

For more information, contact your AT&T Representative, or visit www.att.com/networking.



Quantum crypto coming to light

■ BY ELLEN MESSMER

Quantum cryptography, a technology that uses photons to encrypt communications over fiber-optic lines and the air, is starting to come out of the laboratory and into commercial use.

MagiQ Technologies recently began selling the world's first commercially available point-to-point quantum-crypto box. Separately, a Swiss company called Id Quantique will start pilot tests of its encryptor with banks and other businesses. Both companies' boxes start at \$50,000.

"We are confident there will be a market, but the question is: How long will it take to grow?" says Grigoire Ribordy, founder of Id Quantique.

The technology has been in the works for two decades and has received considerable financial backing from the U.S. military. Supporters say quantum cryptography will make cracking datastreams more difficult than ever, in part because it makes possible the changing of encryption keys — such as those based on Triple-DES or Advanced Encryption Standard — at the dizzying speed of about 100 times per second. This so-called quantum-key distribution method is potentially a better way to exchange keys for point-to-point encryption than what is offered in current symmetric-key technologies. Quantum crypto also automatically detects when anyone is trying to eavesdrop on a communications stream.

"With quantum key distribution there's no way of breaking the key," says Charles Bennett, IBM research staff member and IBM fellow. He invented the basic quantum crypto technology, called BB-84, with colleague Gilles Brassard of the University of Montreal, back in 1984. "It differs from the more ordinary methods, such as Diffie-Hellman Factoring."

Despite such advances, the technology has its challenges, including distance limitations.

Id Quantique's encryption/decryption unit, dubbed the ID500 (it features optical phase modulators, couplers, single-photon detec-



Henry Yeh, program director at BBN for the quantum cryptography project, stands by a photon machine — nicknamed Anna — that will be installed soon at Harvard University for quantum cryptography experiments.

tors and diodes), is limited to less than 62 miles before the photons performing the encryption lose their force over a fiber-optic line. "For the first pilot tests, we'll only go a few kilometers," Ribordy says.

MagiQ's QPN gateway also has distance issues, which the company tackles by adding a repeater after 74 miles "to regenerate the photon amplification," says Andrew Hand, vice president of business development. The box is limited to encryption at 100M bit/sec, although the company hopes to push that to 10G bit/sec.

There are no commercial wireless "free space" quantum crypto products yet, but many research labs are seeking to push back the barriers there as well. The National Institute of Standards Technology has attained a distance of 18 miles at 312M bit/sec

with its experimental equipment, says research scientist Carl Williams.

Quantum crypto, however, has failed to win over some experts of traditional crypto methods, who argue that the technology is overkill for most businesses, which already have many tried-and-true, strong, point-to-point encryptors in place.

"It's technically intriguing, it offers higher strength and speed potentially, but do we have applications that need that?" says Taher Elgamal, founder of company Securify and the inventor of the widely used Secure Sockets Layer protocol for the Web.

"I don't think it provides anything in terms of practical advances," says crypto expert Bruce Schneier, founder of security firm Counterpane. "I don't think it's anything more than a fascinating quantum mechanics area of research."

The U.S. government, in particular the military, begs to differ. It has long seen the potential of free-space quantum crypto in securing satellites, for example. Quantum crypto was also on the agenda at last week's International Society for Optical Engineering's Defense and Security Symposium in Orlando.

Three years ago, the Defense Advanced Research Projects Agency (DARPA) started the Quantum Information Science and Technology program, and millions of dollars in research funding related to quantum cryptography has since gone to universities and companies to show it can work.

BBN Technologies, for instance, is doing DARPA-funded research in both free space and fiber-optics quantum crypto.

"Every year DARPA wants to see some breakthroughs," says Henry Yeh, program director for quantum cryptography at BBN. "The long-term goals are things like earth-to-space communications and ground use."

BBN's lab is working on a prototype for satellite communications, and Chip Elliott, a senior engineer at BBN, says he's convinced it's going to be possible to eventually get much better mileage over the air than in fiber.

"With fiber, you can only get about 50 miles due to single photons getting absorbed by the fibers," he says. "But space-based, it looks like you could get 10,000 miles." The air brings its own problems, though, with clouds, dust and unsettled conditions creating interference.

BBN, which has so far only used its quantum-cryptography gear in the lab, plans its first outside tests next month by setting up dark-fiber links with Harvard University to encrypt data between the two sites. "The step after that would be to try it on normal installed telecom fiber," Elliott says.

Some technology watchers say quantum crypto continues to have an aura of secrecy because the greatest demand for it is coming from the military and financial sectors that guard very sensitive data. "If you need it, you don't want people to know," says Trent Henry, an analyst at Burton Group. ■

NetScreen goes modular

■ BY TIM GREENE

NetScreen Technologies last week rolled out a firewall/VPN box with a modular design for adding new security functions.

The NetScreen-ISG 2000 has three slots for blades supporting applications such as virus screening, intrusion prevention and content filtering. The blades will have independent processing power so that adding applications doesn't slow firewall and VPN performance.

One NetScreen customer who has used the company's older 500 and 5000 devices, which do not have the add-on processor cards, says he prefers the new design. When Layer 7 packet screening was added to these earlier

devices, they took "a significant performance hit," says Jeff Murphy, senior communication system administrator for the State University of New York at Buffalo.

NetScreen's efforts with the ISG 2000 parallel those undertaken by vendors such as Cisco and Fortinet to combine intrusion detection and prevention on firewall/VPN devices.

Throughput on the ISG 2000 — 2G bit/sec for firewall, 1G bit/sec VPN — falls between that of the NetScreen 500 and 5000. The ISG 2000 supports up to 24 10/100M bit/sec Ethernet ports to attach to other LAN devices.

Pricing runs from \$38,000 to \$115,000. Intrusion-detection and -protection modules are scheduled to be out later this year. ■

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Short Takes

■ **RackSaver**, which sells servers and software used to build high-performance computing clusters, last week acquired systems management software vendor **MPI Software Technology** for an undisclosed sum. RackSaver has changed its name to **Verari Systems**. Verari plans to combine its own BladeView and RackView systems management software with MSTI's cluster management products, creating an integrated product that will be called Verari Command Center, the company said.

■ **Iomega** is branching out from the desktop market with the introduction of a back-up drive for small companies. The **Rev 35G byte/90G byte** drive comes with software that automatically will back up small servers and individual desktop computers on the network. If a server fails, the Rev drive will reboot the server and restore its operating system, applications and data. The 2.5-inch-by-2.5-inch cartridge is removable. It can transfer data eight times faster tape and is half as expensive as Digital Data Storage-4 tapes, the company says. The Rev drive works with Windows Server 2003; Linux will be supported in the future. The drive starts at \$380; disk cartridges cost \$60.

■ **Intel** said last week it plans to update its Itanium 2 processor line with two new configurations of the chip, designed for dual-processor servers. A 1.4-GHz version of the processor with 3M bytes of level 3 cache is available, and a faster, 1.6-GHz version with the same amount of cache will be available next month, the company said. A variety of computer vendors including Dell, Fujitsu and IBM plan to ship systems with the processors, Intel said. These servers are expected to be faster and cost approximately 30% less than current Itanium dual-processor systems, which are built with the 1.4-GHz processor that Intel launched last September. That chip contains 1.5M bytes of cache.

Sun redirects server technology

■ BY JENNIFER MEARS

Sun is pushing a processor technology that it says will let single chips within servers handle multiple tasks at the same time. This will increase system performance by as much as 30 times of today's boxes, the company says.

The idea, called throughput computing, is propelling Sun's microprocessor strategy, which the company recently modified to give greater attention to its multithreading efforts. Earlier this month, Sun announced it was scrapping two "conventional" microprocessor projects it had in the works for years to focus on its throughput computing technology.

Gone are the UltraSparc V, code-named Millennium, a new RISC design for midrange and high-end servers, and Gemini, a dual-core chip aimed at low-end systems.

See Sun, page 18

Changing course

Sun has shifted microprocessor plans to focus on what it calls throughput computing, a technology that lets chips handle multiple tasks at the same time.

- **February 2003.** At its analyst conference, Sun introduces its throughput computing initiative. A chip code-named Niagara, based on technology acquired from Afara Websystems, is expected to roll out by 2005.
- **August 2003.** Sun says it will introduce systems in 2004 based on Gemini, a microprocessor that contains two UltraSparc II cores.
- **February 2004.** Sun unveils UltraSparc IV, a chip with two UltraSparc III cores and the first to offer the multithreading, throughput computing technology.
- **April 2004.** Sun confirms that it has shelved plans for Gemini, based on the older UltraSparc cores, and its Millennium project (UltraSparc V), which was based on an entirely new chip architecture, in order to focus on Niagara and another multicore chip for midrange and high-end servers, code-named Rock. Niagara is expected to roll out in 2006, with Rock following in 2007.

Expand overhauls compression line

■ BY TIM GREENE

Expand Networks is introducing a set of software plug-ins and other upgrades to the operating software for its acceleration devices to further speed site-to-site corporate WAN traffic.

New software modules for the company's Accelerator appliances reduce the amount of traffic that specific applications must send across congested WAN links, making the applications perform faster — two to four times faster, the company says.

These capabilities are in addition to what the devices already did: compress traffic. Customers buy Expand devices in pairs and place one at each end of a WAN link, between the LANs and the WAN routers. The Accelerators compress traffic bound for the second location, Expand says. The company competes against Peribit, ITWorx, Packeteer and FatPipe and newcomer Riverbed.

The new Acceleration Plug-Ins reduce traffic for specific protocols that commonly run over WANs: HTTP, Secure-HTTP, DNS, FTP and TCP. Most of these include caching repetitive elements of the traffic so it is served up locally by the Expand box rather than drawn from a server across the WAN connection. The plug-ins are part of the operating system upgrade. The upgrade also supports Layer 7 quality

of service (QoS) so the devices, for example, can distinguish individual Web applications, whereas before all Web traffic was treated equally.

This Layer 7 QoS will let Eagle Global Logistics give its universal Web-based shipping software priority over other Web traffic, says Daniel Gonik, senior network engineer for the international freight company. The company grew through the acquisition of other companies, each of which used its own shipping software. Standardizing on a new Web-based application last fall meant greater demand on network links between about 50 international locations and data centers in Houston, London and Singapore, Gonik says. Layer 7 QoS distinguishes the shipping application from, say, Web browsing so business is transacted faster, and browsing takes a back seat.

Installing Expand gear also avoided the need to add bandwidth on Eagle Global's WAN, and in some cases the devices enabled the reduction of bandwidth from 256K to 64K bit/sec, he says. Either via cost savings or cost avoidance, the Expand Accelerators are saving Eagle Global about \$1 million per year, and individual pairs of the appliances have paid for themselves within a month, he says.

Gonik says new support for Open Shortest Path First routing in Expand's oper-

ating software will let Expand boxes swap routing information and, if one fails, find an alternate route to reach one of the data centers.

Previously, the boxes supported only static routes that required human intervention if an appliance failed, he says. The software upgrade also compresses traffic without masking Multi-protocol Layer Switching markers on packets so customers can reduce traffic on MPLS VPNs.

Expand also is introducing three hardware devices. Two are beefed-up versions of earlier devices. The first is the 4020, which has 4M bit/sec throughput for \$5,500, twice the speed for half the price of the older 4002. The second, due out in June, is called 6840, which can support up to 350 sites, 250 more than the previous 6810 at the same price of \$25,000.

The 6810 gives Expand a device to compete with Peribit's largest devices, says Peter Firstbrook, a senior research analyst at Meta Group.

Expand also is introducing a Secure Sockets Layer acceleration device that offloads SSL connections from servers and compresses traffic before it is sent over WAN links. Called HTTPS Accelerator, the base model costs \$29,000. This device puts Expand in competition with FineGround, NetScaler and Redline Networks, Firstbrook says. ■

WIRED
WINDOWSDave
Kearns

I was in Australia recently to speak at the Marcus Evans conference of Identity and Access Management in Sydney, and my wife and I took the opportunity to spend some vacation time along the coast of New South Wales exploring its attractions. Driving my rental car on the left side of the road wasn't a major problem, and putting the turn signal stalk on the right side of the steering wheel with the left-side stalk controlling windshield wipers wasn't a problem most of the time. When I knew a turn was coming, or could see I wanted to

Operating systems can take some funny turns

change lanes, there was time to think about what I was doing and use the correct stalk. This could have led to a dangerous situation, but fortunately didn't.

How does that relate to you? Many people are changing the operating systems they're working with these days, migrating from NetWare, Windows or Unix to Linux for their servers and hosts. The movement to Linux on the desktop is also gathering steam (but the jury is still out on whether this will become a tide of change or merely a momentary ripple). There are similarities among all these operating systems but when you've used one relatively exclusively for many years, you become conditioned to look for certain signs that indicate potential problems and instinctively react to those signs.

A new operating system, like the roads in

New South Wales, might disguise some of those signs so you don't seem them until it's almost too late to react. When you do, it might be the reflex reaction of many years' training rather than the action needed for your new operating system. One solution is to use the new operating system's scripting capabilities to alias your old actions (trivial example: in Linux create a DIR command that does an LS). The better course of action, though, is to learn the tools before you really need to use them in an emergency. Try practicing "emergency" situations to train yourself to react correctly. The network you save could be your own.

Kearns, a former network administrator, is a freelance writer and consultant in Silicon Valley. He can be reached at wired@vquill.com.

Tip of the Week

NetWare network managers can get Novell's new **Enterprise Linux Services** (www.novell.com/products/linux/) and run the old, familiar NetWare utilities and apps even while moving to a new operating system platform. Not only should this help your reaction time, but it promises to make Linux a better business tool.

Storage management standard advances

■ BY DENI CONNOR

PHOENIX — The Storage Network Industry Association announced recently that most of the industry's leading vendors now comply with the Storage Management Initiative Specification, a group of protocols that let storage software and customers who use that software manage heterogeneous storage devices.

At Storage Networking World in Phoenix, 14 vendors demonstrated SMI-S-conforming products. Among them were Brocade Communications, CNT, EMC, Hitachi Data Systems, HP, IBM, McData, StorageTek and Sun. The vendors tested their products with SNIA's Conformance Testing Program (SNIA-CTP), which validates that storage products have the SMI-S standardized management interface. If products conform to SNIA-CTP, users will know they will be able to manage them in a uniform way.

"For customers, this will make life a lot

easier to do heterogeneous management," says Jamie Gruener, a senior analyst for The Yankee Group.

SMI-S grew out of work done on Common Information Management within the Desktop Management Task Force. The current version of SMI-S, Version 1.0.2, lets software vendors create management systems that identify, classify, monitor and control physical and logical storage resources.

Kent Smith, principal consultant for IPSO, a business systems integrator in Wayland, Mass., says this standard will be beneficial.

"Once people start developing SMI-S applications and as the industry starts accepting it as something that's going to be a standard inclusion in their products, the rationale for it will become more apparent," he says. "For instance, it will be cool if we can start using EMC TimeFinder software against any [vendors'] hardware that's out there."

Vendors complying with SMI-S are expected to ship products next year. ■

That's management

Here is a sampling of the vendors that support the upcoming (SMI-S) standard, which will provide for automated provisioning.

Company	Products
Brocade	Silkworm switches
CNT	FC/9000 Fibre Channel Directors
EMC	Clariion CX and FC4x00 arrays; Symmetrix
Hitachi Data Systems	Lightning and Thunder arrays
HP	StorageWorks Disk Array XP; Enterprise Virtual Array, Modular Disk Array, B Class Fibre Channel switches
IBM	Enterprise Storage Server
McData	Intrepid and Spherion switches
Network Appliance	FAS270C, F825C, F880C, FAS940C, FAS960C, FAS980C
Sun	Storedge 3000

Sun

continued from page 17

Sun concedes that tough economic times — the company recently laid off 3,300 employees and says it expects to lose as much as \$810 million in the upcoming quarter — have pressured it to make the shift.

But David Yen, executive vice president of processor and network products at Sun, also says that the company made the change to direct its resources to the throughput computing technology.

"You talk with CIOs throughout the world and more and more the challenge to them is not the speed of getting one job done. Instead, it's how to maintain the ability to deal with the mass volume of requests," he says.

Technology such as 3G mobile data transmission and radio frequency identification, combined with the move toward utility computing, will increase exponentially the number of networked devices and the workload servers handle, Yen says.

Conventional chip architectures have been too focused on optimizing for one job, Yen says. Analysts note that while processor speeds are increasing, memory limitations can slow throughput. Sun's approach is to let multiple cores on one piece of silicon handle multiple simultaneous threads, software-based instructions that must be processed.

Analysts seem to like the idea.

"Today, servers can be idle up to 75% of the time while their processors stall waiting for data from memory, leaving considerable room for improvement in processor design," IDC analysts wrote in a Sun-sponsored white paper on the company's throughput computing strategy. "By focusing on increased application workload throughput instead of clock speed, Sun's [chip multithreading] processors could deliver significant increases in application performance."

But the white paper also notes that challenges remain such as competitive threats

from companies such as IBM, which says it will include multithreading technology in the upcoming Power5, and alternative architectures such as clusters, blades and grids that are aimed at tying together smaller systems to improve throughput.

Sun took the first step in its throughput computing effort with the introduction of the UltraSparc IV earlier this year, which contains two cores and a dual-threaded architecture. However, in 2006, customers can expect their first real glimpse of throughput computing with the advent of systems based on Niagara, a chip design that includes technology from Afara Web-systems, which Sun acquired in 2002.

The first generation of Niagara, which will be optimized for networks that face workloads such as security processing, will have eight cores, each capable of handling four threads.

"So one chip could run 32 threads of execution simultaneously," Yen says.

Later generations of Niagara and a multi-threaded chip for midrange and high-end systems, code-named Rock, are expected to debut in 2007. Rock is intended to run applications such as large databases or data warehouses and so will have multi-threaded capabilities, and also will be optimized for single-threaded workloads.

The decision to scrap the Millennium and Gemini chips "fundamentally simplifies Sun's road map," says Nathan Brookwood, an analyst at Insight 64. "There were just a lot of products, and even if Sun had met all its schedules, these things would be coming on at relatively short intervals. And the systems guys would have had a hard time keeping up, and so would the end users who would have to make choices between the systems." ■



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Short Takes

■ **BEA Systems** is offering customers a path to utility computing through a partnership with **Veritas Software**. BEA last week signed a deal to make its WebLogic application server work better with **Veritas OpForce**, for automatically provisioning servers; **Veritas IndePTH**, for managing application performance; and **Veritas Cluster Server**, for linking servers in a group. The closer ties to WebLogic will appear in a version of IndePTH planned for September and in a version of OpForce in the fourth quarter, Veritas said. Veritas Cluster Server has been validated for WebLogic and is available now. Other vendors including HP offer utility software that works with BEA's products, and the deal with Veritas gives customers another option.

■ **Polycom** is expanding its VSX line of **videoconferencing endpoints** with a new, self-contained unit designed for an executive desktop. The **VSX3000** includes a 17-inch flat-panel display, built-in speakers that can support 14-KHz audio, a pan-tilt-zoom camera, Advanced Encryption Standard and support for the H.264 video compression standard. It also can be used as a computer monitor. Polycom plans to ship two versions of the VSX3000 this month: IP-only for about \$5,000 and IP/ISDN for about \$6,500.

■ **Sun** last week released Java System Application Server Platform Edition 8, an upgrade to its application server that supports Version 1.4 of the Java 2 Platform Enterprise Edition specification. Platform Edition is a low-end version of Sun's Java software geared toward pilot projects and departmental applications, Sun said. Among the advances in Version 1.4 is support for the Web Services Interoperability group's Basic Profile, which tells customers how to implement the main Web services standards to interoperate with other vendors' products. The WS-I includes large software makers such as BEA, IBM and Microsoft.

DoD pumps up RFID effort

■ BY ANN BEDNARZ

U.S. Department of Defense suppliers should expect to see a new clause in their contracts soon that require the use of radio frequency identification technology.

Making RFID tagging a contractual term is a key step in the Defense Department's RFID adoption schedule. However, there's a lot of work to be done to finalize the agency's RFID plans and iron out suppliers' implementation strategies.

Last October the Defense Department unveiled its RFID policy, which requires suppliers to put passive RFID tags (those without an integrated power supply) on individual parts, cases or pallets by January 2005. The agency expects that with RFID-tagged items and containers, logistics experts could more efficiently track the progress of military supplies en route to personnel.

"The way we fight wars is changing. We need to keep abreast of changes in the way that we do logistics in order to maintain the support that our forces deserve," says Alan Estevez, assistant deputy under secretary of defense for supply-chain integration. "We feel that

the use of RFID technology is critical to doing that."

Estevez took part in a Defense Department summit earlier this month in Washington, D.C. The summit's purpose was to update suppliers on the agency's RFID plans and get feedback on their implementation progress.

At the summit, the biggest concern suppliers raised was compatibility between the Defense Department's existing unique identifier (UID) naming convention and new electronic product code (EPC) identifiers, Estevez says.

The Defense Department uses UIDs to distinguish materials that require life cycle tracking — weapons, aircraft parts and big-ticket items that cost more than \$5,000, for example. Global standards bodies manage the assigning of EPC numbers to be embedded in RFID tags to identify a specific item in the supply chain.

"Some of our larger UID constructs will not fit on the current tag capabilities," Estevez says. The Defense Department plans to work with suppliers individually to resolve incompatibilities, he says. Meanwhile, "the technology is evolving rapidly, and as the next generation of tags and readers becomes available, we

Compliance costs

Suppliers facing RFID mandates from the Defense Department, Wal-Mart, Target and others will be spending big. Forrester Research estimates it will cost a \$12 billion supplier that ships 15.6 million cases to Wal-Mart more than \$9 million to roll out RFID and fund one year of maintenance.

Item	Cost
Tags	\$7,594,971
Hardware	\$328,668
Software	\$183,000
Consulting and integration services	\$127,500
Internal RFID team	\$314,600
Tag and reading testing	\$79,500
Additional warehouse labor	\$469,238
Training for warehouse labor	\$39,221
Total	\$9,136,698

believe that most of those issues will be resolved," Estevez says.

See RFID, page 20

SiteScape streamlines software

Updated collaboration software lets users download multiple files simultaneously.

■ BY JOHN FONTANA

SiteScape this week is upgrading its Web-based collaboration software with features designed to let customers streamline document handling, access control and workflow.

SiteScape Enterprise Forum 7.1 can download multiple files at one time, create workflows using a new graphical tool, view more than 200 file formats on a Web browser and set role-based access controls.

The company, which competes with Documentum, Open Text and Microsoft SharePoint, has focused on eliminating processes that slowed down users of its collaboration software, which uses a Web browser as its client.

"Previously, workflow was done in a text file. Now we have a graphical flow chart capability where you can take your workflow

and drag it around," says Jeff Thompson, technical services director for the U.S. Navy's Tactical IT Integration Program Office.

Thompson says the addition of a feature called multi-file download now lets end-users mark a group of documents, collect them into a ZIP file and bring them down to their desktop in one action.

SiteScape also has added an HTML viewer that will render a read-only copy of documents in any of 200 file formats. That is a boon to Thompson, who can't add any software to a desktop configuration mandated by the military.

"The viewer eliminates the need for desktop software, which is nice for programs like Visio that are real expensive," Thompson says.

Forum 7.1 now can operate behind multiple levels of firewalls to increase security, especially for database servers used to

house documents. The software also includes a new workspace management tool to modify access controls for users assigned to a particular role, such as sales manager. SiteScape has added Lightweight Directory Access Protocol controls that let the Enterprise Forum user and groups database be automatically synchronized with users and groups stored in any LDAP-compliant directory. The feature lets changes in the directory, such as adding or deleting a user, be replicated in the Forum system.

SiteScape also has added support for SuSe Linux and Windows Server 2003.

Enterprise Forum 7.1 costs \$99 per user. ■



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Bradner

There is hardly a dearth of groups worrying about cybersecurity. Yet another report on the subject was released this month by yet another group few people had heard of. The report has raised eyebrows by suggesting that buyers should be able to say they want vendors to offer secure systems.

Last month I wrote about the purposely toothless recommendations that the National Cyber Security Partnership (NCSP) is releasing (see www.nwfusion.com, DocFinder: 1627). Since I wrote that column, the NCSP has released an additional report that fits the same mold as the previous two.

This other new report, however, is from the Corporate Information Security Working Group (CISWG), which Rep. Adam Putnam (R-Fla.) established late last year.

Patching yesterday's holes?

The group was established in lieu of introducing legislation, strongly opposed by the business community, that would have forced publicly traded companies to include a report of an information security audit in their annual Securities and Exchange Commission filings. I guess the business community worried that such audits might reveal that corporate indifference to information security issues is far too common. The threat of the truth can make some people nervous.

The CISWG report consists mostly of four lists of recommendations and some supporting information, including a good list of information-security-related references (DocFinder: 1628). The recommendations, if fully implemented, might not be quite as toothless as the NCSP recommendations. That might or might not be a good thing.

The Awareness and Education Recommendations include developing materials that would make it clear to home users, and others, including corporate executives in small and large businesses, that

information security is good stuff.

The Best Practices Recommendations, among other things, feature establishing an international "umbrella organization to oversee the further development of IS guidance for organizations and users of all sizes and types" with representatives from just about every walk of life. Sounds like a perfect way to ensure that nothing gets accomplished.

The Incentives-Liability/Safe Harbor Recommendations include throwing the insurance industry at the problem by asking it to "modify the degree of availability and the cost of cyber-risk insurance protection based on the degree that the company exercises cyber-risk best practices." This presumes the insurance industry would be better at picking effective best practices than the high-end auditing firms have been — a presumption I have a hard time supporting. But making it harder for a company that doesn't even try to address information security problems to pass the risk of its inaction to an insurance company is not a bad idea.

Finally, the Procurement Practices Re-

commendations include the suggestion that has attracted the most attention from the news media. After recommending that the U.S. government mandate minimum configuration security standards for government-purchased equipment, the working group recommends providing "an exemption from U.S. anti-trust laws for critical infrastructure industry groups that agree on obligatory security specifications for software and hardware they purchase."

This seems like the approach of the anti-virus industry: Most vendors can only fight yesterday's problem because that is all they know. These vendors also give a good road map of ignored areas.

Disclaimer: Harvard does not confine history to the history department, but is not constrained by it in other departments. Still, the university has not commented on this report.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sob.com.

Anywhere updates Web application software

■ BY JAMES NICCOLAI

Anywhere released an upgrade to M-Business Anywhere last week with features designed to make the mobile application software more attractive to corporate users.

Customers use M-Business Anywhere to create Web-based applications that users can access from devices such as PDAs. The new version adds support for laptops, desktops and tablet PCs, says Diana

Ungersma, a senior product manager at iAnywhere.

The product lets companies develop a Web-based application for use on multiple devices once, rather than having to develop different versions. It includes a client component to access data and submitting forms offline, so for example, a salesperson could do paperwork on the road and sync up the data at the office.

The upgrade also has new tracking capabilities. M-

Business Anywhere has always stored such information according to the type of device being used and the frequency with which users synchronize their data, but that information was buried in log files.

Anywhere has added graphical reporting functions that make it easier for IT departments to keep track of how the software is being used in the field, Ungersma says.

The company also added support for new languages: In addition

to English, the client interface for M-Business Anywhere is available in French, German, Italian and Spanish, Ungersma says. The new software release, Version 5.5, is priced from \$68 to \$299 per end user, depending on the required capabilities.

A subsidiary of Sybase, iAnywhere acquired M-Business Anywhere when it bought AvantGo about a year ago. The software drives the AvantGo consumer Internet service, which lets subscribers view Web pages on

handheld devices. iAnywhere has been revving the software to make it more appealing to enterprise customers.

In February, iAnywhere said it had integrated the product with SQL Studio Anywhere, letting developers create Web-based applications that sit on top of iAnywhere's database for client devices.

Niccolai is a correspondent with the IDG News Service's San Francisco bureau.

RFID

continued from page 19

Analysts are skeptical of manufacturers' ability to keep pace with RFID mandates from retailers such as Albertsons, the Defense Department, Target and Wal-Mart. Forrester Research predicts that only 25% of suppliers will meet Wal-Mart's January 2005 mandate, for example.

"There is no business case for most suppliers in the short term," says Christine Spivey Overby, a senior analyst at Forrester. "The technology is not ready, and there is a lack of deep expertise in the industry to help suppliers implement RFID."

Whether the Defense Depart-

“The technology is not ready, and there is a lack of deep expertise in the industry to help suppliers implement RFID.”

Christine Spivey Overby

Senior analyst, Forrester Research

ment's mandate will launch on time remains to be seen. Estevez says the Defense Department is on track. "We're not looking at any slips in time frames," he says.

This summer, the agency will release details about the forthcoming RFID contract clause for public comment. Provisions of

the clause will be finalized in August and September, after which it will begin to appear in all supplier contracts, Estevez says.

Suppliers are onboard, he insists. "They understand that this is going to be a difficult road. There are going to be some upfront costs, but if you do this

properly, the upfront costs will come back in an ROI," Estevez says.

Exemptions are not planned, but not impossible, Estevez says. "We're not looking at any measure of leniency. Depending on the contract terms and depending on the availability of the material, contracting officers do have the ability to waive certain contract clauses. But that is not our intent, and that will have to be done on case-by-case, completely unique basis," he says.

Since launching its RFID initiative last July, the Defense Department has been in contact with other agencies including the General Services Administration, the Food and Drug Administration and the Department

of Homeland Security to discuss RFID technologies and coordinate their programs, Estevez says.

Looking ahead, the Defense Department plans to take part in a meeting in the next few months with fellow agencies to compare RFID notes and investigate ways to achieve a consistent RFID policy — particularly because many of the agencies buy from the same suppliers. "We believe the time is ripe to host an inter-government meeting to talk about what programs everyone is doing and try to get us all in sync," Estevez says. ■

■ For more on RFID, see PAGE 40.

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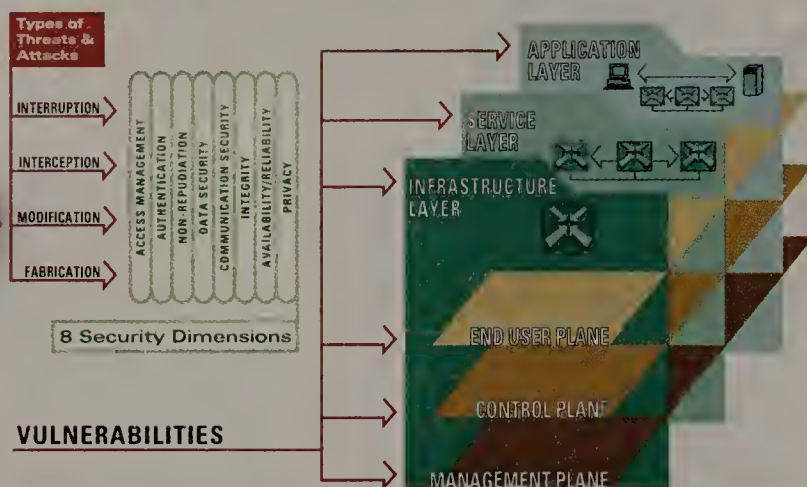
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Wireless data service options explode

Wi-Fi, EV-DO and other offerings provide alternatives to wireline services.

■ BY JIM DUFFY

In a few short years, the number of wireless connections to network services is expected to eclipse that of wireline connections.

One key enabler is the emergence of new wireless data services intended to provide high-speed access to corporate computing resources for mobile end users, those at remote sites and even those at primary offices.

"The expectation is that [users] have broadband connectivity wherever they go," says Mark Lowenstein, managing director of wireless consultancy Mobile Ecosystem.

The wide-area cellular network will be the default network for data connectivity for travelers, Lowenstein says. Then there will be pockets of more compelling broadband coverage, such as Wi-Fi or WiMax.

Here's a look at how some of these offerings are shaking out.

Wi-Fi and EV-DO

Depending on whom you talk to or what you read, Evolution-Data Only is supposed to kill off Wi-Fi services, Wi-Fi is supposed to kill off EV-DO, or the two are supposed to coexist in harmony.

The more familiar Wi-Fi enables 11M to 54M bit/sec wireless access within 300 feet of an access point. The less familiar EV-DO is a 3G cellular WAN technology intended to turn your cell phone into a powerful data transmission tool. It supports speeds of up to 2.4M bit/sec, far exceeding previous generation cellular transmission rates of 144K bit/sec.

EV-DO service is hard to find, although some big service providers are starting to roll it out. Verizon, for example, has two trials — one in San Diego, the other in Washington, D.C. — with plans to expand to more metropolitan areas later this year. Monet Mobile Networks, a small operator, launched service in Duluth, Minn., two years ago.

Wi-Fi hot spots are more plentiful, but customer acceptance has been lukewarm because of pricing and coverage issues, among others. Workers accessing the service at hot spots in coffee houses and airports have been charged multiple connection fees between \$6 and \$10 when moving between hot spots. Coverage has been spotty, which makes signing up for monthly service with one provider risky and potentially expensive.

Such issues explain why some users are turning to their cellular providers, some of which have EV-DO networks. Although data rates are slower, service is "free" under existing cellular contracts, and quality and coverage are predictable.

Nonetheless, Wi-Fi service providers see their offerings living peacefully alongside EV-DO.

"Is Wi-Fi going to be everywhere? Everywhere where it makes sense, yes," says Dan Lowden, vice president of marketing for Wayport, which provides hot-spot access in hotels and airports. "Customers that we serve are always looking to be best connected. When they're in a hot spot, they're best connected to Wi-Fi; when they're not in a hot spot, they're best connected to a wide-area network."

Lowden says Wayport connects 350,000 people to its service per month and that the number is growing 15% to 20% per month.

Boingo Wireless, a company that aggregates hot spots to facilitate roaming, says equipment pricing favors Wi-Fi over EV-DO. Many mobile devices are or will be

Wi-Fi-enabled, while EV-DO cards for laptops or PDAs cost between \$200 and \$300, says Tamara Steffens, vice president of sales at Boingo.

It's the subscription rate that's turning users away from Wi-Fi as operators price services high to recoup their capital investment in access points and other equipment to Wi-Fi-enable their outlets, Steffens says. Lack of roaming between networks is also an issue, she says.

"We're going to have to convince those hot-spot operators that roaming will actually drive transactions and that volume is really where the entire market makes it," Steffens says. "As soon as that subscription rate for Wi-Fi service comes down and the concept of roaming is solved, the volume of transactions will go up and I think you'll see the whole model fall into place."

Fixed wireless

One market that hasn't made it so far is fixed wireless, which is intended to provide multimegabit last-mile services less expensively and faster than comparable wireline offerings from the RBOCs. Companies such as Teligent and Winstar Communications tried unsuccessfully to sell fixed wireless point-to-point and dedicated Internet access services to businesses in the late 1990s and the last few years.

But XO Communications says the market for fixed wireless — specifically local multipoint distribution systems — has been reinvigorated now that the technology has matured and IT spending has increased. XO says it is the largest owner of fixed wireless spectrum in the 27-GHz to 32-GHz range in the U.S., potentially making fixed wireless available from XO in the top 30 U.S. cities.

Earlier this year, XO announced trials of the service in Irvine, Calif., and San Diego with about 37 customers.

The XO Fixed Wireless Access service offers users 5M, 10M and 20M bit/sec local loop pipes for Ethernet or Internet service. It's designed to bypass the traditional wireline-based last-mile services offered by the RBOCs, which reduces XO's access charges — savings that could be passed on to the customer.

The service also can be provisioned in days vs. weeks or months with RBOC services, XO says. Limitations of the service, however, are a distance of 3 to 5 miles and

a line-of-sight requirement.

"You're not going to go out and blanket neighborhoods, that's for sure," says Mark Salter, vice president of fixed wireless services at XO. "You're going to go into high-teledensity areas like central business districts" and thickly populated suburbs, he says.

WiMax

Those high-teledensity and thickly populated suburban areas might find another fixed wireless offering down the road. The emerging IEEE 802.16a WiMax standard is expected to make its commercial debut in mid-2005.

WiMax is a metropolitan-area broadband wireless technology that operates in the spectrum below 11 GHz and supports data rates up to 75M bit/sec. It can connect users up to 30 miles away.

Covad Communications is exploring the possibility of conducting WiMax trials late this year as a way to bridge gaps in DSL coverage, says Ron Marquardt, technical director of strategic development at the competitive local exchange carrier (CLEC).

"There are areas where we can't serve customers because they're behind fiber-fed remote terminals that we don't have access to, and there are other areas that are far enough from a central office that DSL can't provide service either," he says.

The CLEC chose WiMax for its non-line-of-sight capabilities and promise of multi-vendor interoperability, Marquardt says.

WiMax Forum compliance tests are slated for the first quarter of 2005, and Covad wants to have a WiMax business plan in place by then, he says. ■

Special Focus

■ WIRELESS SERVICES

Takes

■ Relatively few business customers have taken advantage of **wireless service number portability** since the system went into effect in late November, according to a survey conducted in February by In-Stat/MDR. About 5% of the 1,000 cell phone users surveyed said they changed their service provider since Nov. 24. Of those who switched, about two-thirds kept their phone numbers. Another 7% said they plan to switch providers in the next three months and at least half plan to keep their numbers when they do.



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EYE ON THE CARRIERS

Johna Till Johnson



Intelligent or stupid? Dumb question

A while back I was asked to comment on the "intelligent network vs. stupid network" debate. Not familiar with it? It all started in 1997 with the publication of a paper by David Isenberg, then an AT&T

researcher, called "Rise of the Stupid Network." Isenberg was protesting a recent initiative by his employer to market "The Intelligent Network."

Isenberg wrote, "The Intelligent Network

was a telephone company attempt to engineer vendor independence, more automatic operation and some 'intelligent' new services into existing network architecture. However, even as it rolls out and matures, the Intelligent Network is being superseded by a Stupid Network [the Internet]." It's a fascinating and well-written paper, and you can find pointers to it at www.isen.com, though it's not actually posted there.

Rather predictably, this did not go over well with Isenberg's employer, and the two subsequently parted ways. But the idea caught fire. It became an article of faith that the Internet is a "stupid network," characterized by stupid switches, intelligent end points and plentiful bandwidth — and that "stupid" (the Internet) was better than "intelligent" (the public switched telephone network).

Seems like we're back to the future all over again. Another large network company, in this case Cisco, has begun promoting the concept of "intelligence in the network." (A March 6 news briefing purported to "examine the trend for more ... intelligence to be delivered over the network.") What's going on? Have the folks at Cisco lost their minds? Don't they know that stupid is smart and intelligent is dumb?

Oh, for Pete's sake. With all due respect to Isenberg, the debate has nothing to do with intelligent vs. stupid, and everything to do with carrier hubris and inability to recognize that the assumptions on which it had created a highly profitable business (scarce bandwidth, primarily voice traffic) no longer applied.

Every network has design assumptions built in. You can't escape it. For example, the current Internet assumes that "end stations" are machines and not users; that data is sent in the form of sessionless packets; and that obtaining the correct IP address for those packets is a function that occurs in a "higher layer" (specifically via DNS, which is very far from a "stupid" function, but indisputably part of the network).

But there are signs these assumptions are a tad frayed at the edges. In today's world of multiple access technologies and smart phones, a user might connect to the 'Net at multiple points simultaneously (from a cell phone and a laptop, say), which can do funky things to routing protocols. We've all noticed the uptake in interest in services such as VoIP, which require sessions.

The bottom line is that the Internet already contains plenty of intelligence, such as routing, addressing and session-creating. It will need to contain more to handle next-generation services. And that's fine. The issue isn't about "intelligent" vs. "stupid" — it's about how well a set of design principles can map to a changing set of expectations and requirements.

Johnson is president and chief research officer at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.



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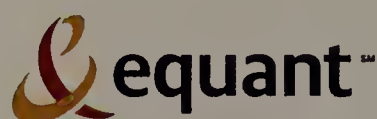
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Technology Update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

SMTPi authenticates e-mail senders

■ BY AMBIKA GADRE

A deluge of spam, crippling viruses and e-mail forgeries such as "phishing" schemes is threatening the value of electronic messaging as a critical communications tool. The root cause of these problems is the inherent anonymity of the e-mail standard Simple Mail Transfer Protocol.

Because the protocol was designed 20 years ago, when spam was still only a canned meat and viruses only infected humans, it is all too easy for an illicit sender to deliver unsolicited or hostile mail under the guise of being legitimate.

SMTPi is an initiative for a next-generation e-mail infrastructure. It has a three-part framework that includes the essential components — identity, reputation and policy — of a new, secure messaging system built on top of SMTP. The "i" stands for identity. Migrating to an identity and reputation-based mail system will enforce sender accountability and eliminate many challenges with e-mail.

Identity

Accurately establishing a sender's identity lets e-mail recipients make confident decisions about how to treat incoming mail based on a sender's reputation. By doing so, it would make it easier to leave spam out of the recipient's in-box.

Building a universal identity mechanism for e-mail is a major undertaking and will be done in phases.

Initial server-level identity mechanisms rely on a sender's IP address. An IP address is verifiable and manageable, and is nearly

impossible to forge because it is established via TCP/IP connection. If the IP address is altered, two-way SMTP conversation would not take place because the return packets required to continue the SMTP conversation could not be routed to the actual sending IP address.

Over the next few years, domain-level identity will be deployed using standards such as Sender Policy Framework, Caller-ID and DomainKeys, but each of these approaches has trade-offs.

The best solution, yet the least-developed, is the use of cryptographic headers that would let users identify themselves at mul-

multiple levels — as individuals, organizations and corporations.

Reputation

A sender's reputation can be tracked by monitoring his mailing history. A sender reputation service tracks a range of measurable parameters such as volume of mail sent globally, complaints, country of origin, presence of an open proxy or relay, proper DNS configuration and other related data. These parameters are used to assess a sender's reputation.

Unlike blacklists, which are in effect a first-generation reputation services, the cur-

rent crop of second-generation reputation services such as SenderBase provide detailed data (a reputation score ranging from minus-10 to plus-10) that lets recipients choose their own policies and thresholds. SenderBase is an open service that system administrators and open source spam filters can access at no charge.

Policy

After authenticating an e-mail sender and establishing his reputation, e-mail receivers need a way to apply appropriate mail policies based on that knowledge.

Today, most mail gateways process all incoming mail through spam filters. This method increases infrastructure costs and reduces the effectiveness of catching spam.

An effective mail policy solution supports variable response that's based on the quality and trustworthiness of the mail source. Mail from known good senders can be routed

around spam filters, mail from known bad senders can be deleted, and mail from suspicious senders can be throttled and sent through highly sensitive spam filters.

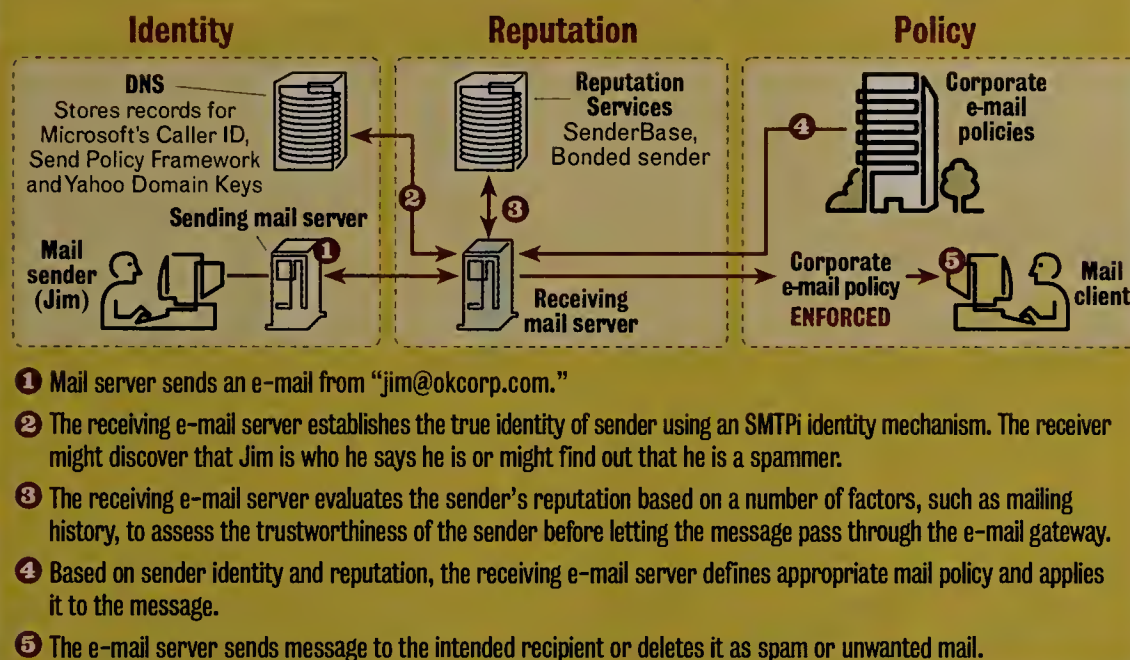
As SMTPi continues to propagate, receivers of e-mail will apply stricter limits on mail originating from a source that does not have an identity and a reputation. This migration toward an identity- and reputation-based e-mail system will make e-mail safer and more reliable.

Gadre is director of product marketing for IS at IronPort Systems. She can be reached at agadre@ironport.com.

■ HOW IT WORKS

SMTPi

SMTPi is a three-part framework of a next-generation messaging system that includes identity, reputation and policy components for enforcing sender accountability.



Ask Dr. Internet

By Steve Blass

We use Nortel's Contivity VPN Client (v04_65.09) to connect to Company A. We have to connect to Company B using another version of the VPN client (V02_62.33). Can we maintain both connections to both companies using one PC? Is it possible to use just one version of the VPN client to establish connections to both companies?

Maintaining both VPN connections simultaneously might not be possible, but you should be able to

connect to either site using the newer version of the Contivity client if Company B's extranet access switch is using IP Security and ISAKMP/Oakley Key Exchange protocol (which v04_65.09 expects). If Company B's extranet access switch has been kept up to date and patched to support the latest IPSec key exchange standards, then you can connect to the site using the newer client software simply by creating a new connection. If Company B's switch runs software older than Version 3.50

and still uses single Data Encryption Standard in IPSec IKE Phase 1, you might be forced to install and use the earlier version of the Contivity client to connect to the site, because some older switches were not upgradeable and do not support the newer IPSec implementation.

Blass is a network architect at Change@Work in Houston. He can be reached at dr.internet@changeatwork.com.

GEARHEAD INSIDE THE NETWORK MACHINE

Mark
Gibbs



Making Outlook work for us, Part II

soft Office Outlook Objects and under that ThisOutlookSession. The right pane now will list the various subroutines and functions you have defined by loading macros and extensions under Outlook. Put the following code in that pane:

```
Private Sub Application_Reminder(ByVal Item As Object)
```

```
    If (TypeOf Item Is AppointmentItem) And _
```

```
        (Item.Categories = "AppRun") Then _
```

```
        Call RunApp(Item)
```

```
End Sub
```

```
Public Function RunApp(ByVal Item As AppointmentItem)
```

```
    Dim WSHShell
```

```
    Item.ReminderSet = False
```

```
    Item.Close (False) 'close reminder
```

```
popup
```

```
    Set WSHShell = CreateObject
```

```
("wscript.Shell")
```

```
    WSHShell.Run Trim(Item.Body), 1, False
```

```
    Set WSHShell = Nothing
```

```
End Function
```

The first line sets up an event handler for Outlook reminders. When a task or an appointment triggers a reminder, the handler subroutine named Application_Reminder will be called.

The calling routine — Outlook itself — will pass the handler an object so we first must test the object to see if it is an AppointmentItem. The alternatives are

MailItem, MeetingItem or TaskItem, and we could choose to launch applications from any of these. TaskItems would be a sensible alternative as well as or instead of AppointmentItems.

Once we know the object is an AppointmentItem we can test its Categories attribute value to see if that equals AppRun (you could look for any category or categories you like — nothing restricts you to just one). If the value is what we're looking for, we now call the function RunApp.

RunApp first clears the ReminderSet property of the item and then executes the close method, which updates the object's properties. This should suppress the reminder alert dialog if you have enabled it, but the dialog seems to get called anyway (although the reminder we just cancelled does not appear). This is very annoying. If you know how to prevent this, please let us know.

Next we call the Windows Script Host to access a native Windows shell. This shell lets us run a program locally, manipulate the contents of the registry, create a shortcut or access a system folder. We are going to run a program.

The trim function strips leading and trailing spaces from the string that we extract from the object's "body" — that's the optional descriptive text, which is another proper-

ty of the object. We then pass this string to the shell instructing the shell to execute it. The next argument, "1," specifies that the window should be activated and displayed (if the window is minimized or maximized, the system restores it to its original size and position). The final argument, "False," causes control to immediately return to our script ignoring any error code from the shell (in other words, if the program doesn't exist or something else goes wrong our script doesn't care).

When the reminder actually occurs will depend on how far in advance of the event we set it. But don't assume that the application will be launched exactly on the minute that you specify — on our test system the reminder usually triggered about 40 seconds after the target time was reached — an odd behavior that is because of the internal architecture of Outlook.

If you need accurate launching of an application you might want to ensure that the reminder occurs a few minutes before the desired start time and hand the details of the program to be executed to an external application along with the start date and time (which would be referenced in our example as Item.Start).

Is that it? Nope. There's more next week. Remind us at gearhead@gibbs.com.



Cool Tools

Quick takes
on high-tech toys
By Keith Shaw

A few more small-device gems

Like last week, we found a few more small devices hiding in our offices. They might look small, but they can be big in saving you time or frustration while on the road.

The scoop: USB six-in-one portable card reader from Sinbon Electronics, about \$20

What it does: Connects via USB 2.0 (or 1.1) ports on a notebook or desktop PC and lets users convert data from six memory card formats (Compact Flash, IBM Microdrive, SmartMedia, Secure Digital, Memory Stick/Memory Stick Pro and MultiMedia Card) onto the computer. Truly plug-and-play, the device connects in a matter of seconds, with lights that indicate when the card is inserted correctly.

Why it's cool: Very portable, it can fit easily into a laptop bag. For notebooks or desktops that don't have media card readers embedded in them yet, this is an easy and affordable way to provide conversion. The device also lets you use the four slots at the same time. You can attach a Secure Digital and a Compact Flash card in

the device at the same time, then convert between the two, for example.

Grade: ★★★★★ (out of five)



Sinbon's six-in-one USB card reader lets you convert data from a variety of memory card formats.

The scoop: eToken Web Sign On from Aladdin Knowledge Systems, about \$772 for 10 tokens and a 10-user software license.

What it does: Stores all of your usernames and passwords for Web-based applications, and e-mail password and VPN access, onto a USB token instead of the hard drive of your computer. If you have a hard time remembering all of your e-commerce passwords, this can be a good way to remember them, while being more secure in case you lose the laptop.

After you save your username/password profile to the eToken, the system "auto fills" the information from the

token the next time you access that Web application. This way, you can avoid having the cookies sit on your system and still have access to the passwords that you need.

Why it's cool: Anything that helps us remember account names and passwords, and still secures them, is OK in our book.

Grade: ★★★★★

The scoop: Veo Photo Traveler 130S from Veo, about \$100.

What it does: The device attaches via Secure Digital I/O slot on a Pocket PC and gives the user a 1.3-megapixel camera. The device is very mobile and can be an alternative to finding a PDA that comes with an embedded camera or using a VGA-style camera phone. The device also lets you record short movies, complete with audio, a self-timer (in case you want to get into the photo), and up to 4x in digital zoom.

Why it's cool: For Pocket PC users, this is an additional accessory that can enhance the usage of their PDA, especially in situations where carrying an additional digital camera is too difficult. The device is easy to attach and the software easy to use to take quick photos. If you are looking for photos to e-mail or to attach to a Web site, the megapixel quality is good enough. The device has a swivel lens to let you take photos of yourself, or swing it around and take photos while using the PDA's view screen as a display.

Grade: ★★★★★



The e-Token stores all your Web sign-ons.

Shaw, who is senior editor of product reviews, can be reached at kshaw@nww.com.



Knowledge Propels...

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ON TECHNOLOGY

John Dix

When silence speaks volumes

In the publishing business there is no end to vendors banging on the door looking for exposure. They are dying for the attention of you, the buyer, and will go to great lengths to try to make their voices heard.

Besides their public relations machines that pump out press releases and user case studies, they come at us with all sorts of ideas, offering to write everything from opinion pieces to technology primers.

Curious, then, when we offered two vendors the opportunity to write a story that would appear prominently in *Network World* — in their own words — about issues identified by members of the Network World Lab Alliance, both chose instead to stick their heads in the sand.

In our first Testers Challenge on Nov. 17 (www.nwfusion.com, DocFinder: 1632), we called on vendors to stop shipping products that support, out of the box, access and management protocols that aren't secure, such as earlier versions of Secure Shell, SNMP and HTTP.

We challenged Cisco to set an example for the industry by changing the practice, offering it 800 words to respond any way it saw fit — to debunk our claim, justify its practice or even talk about how it would address the issue in the future.

Remarkably, the company refused. Rather than tell you, the buyer, what it makes of an issue that independent testers of its products have identified as a problem, it chose instead to remain mum, presumably in the hope that this would create less of a ripple. The only response we got was a product manager calling to share a few thoughts for a follow-up story.

Microsoft assumed the same self-defensive posture when we challenged the company in our next Testers Challenge in March to simplify and streamline the process of patch management (DocFinder: 1633).

Instead of using the offered space to talk directly to buyers about the issue, a Microsoft security program manager called to say he wasn't hearing the same concerns. We have no way of knowing if that is true, but given the widely acknowledged security problems Microsoft has, wouldn't you think it would relish any opportunity to lay out its vision? The refusal to step to the plate only serves to exacerbate the situation, leaving the impression the company is so guilty it can't even look the buyer in the eye.

Moreover, it does you a disservice. Instead of meaningful information you can use, it leaves you second-guessing the players. You deserve better.

— John Dix
Editor in chief
jdix@nww.com

Spam free

Mark Gibbs' Backspin column "The charge is in the e-mail" (www.nwfusion.com, DocFinder: 1624) presents the most persuasive arguments I've heard on this discussion.

My company has been 100% spam free for about two years (despite the 97.5% rate of spam hitting our front door), and it doesn't require any changes to SMTP or DNS, or use questionable IP block lists. We can do it our own way without imposing any changes to the way e-mail now works. If others can't do the same, then they are doing it the wrong way.

Roger Walker
Director
Mercmail
Edmonton, Alberta, Canada

The other side

I'm wholeheartedly against spam, but I am now seeing the other side of the coin. I am in youth ministry and we have about 200 students' e-mail addresses in our address book. We have been sending weekly e-mail to them for about three years, with 40 or fewer addresses in each folder. Suddenly in the last few weeks, nearly all of our Yahoo, Hotmail and some MSN addresses are getting bounced back.

We are not advertising or selling any products; it's just a weekly update on upcoming events, birthdays and so forth. I think we have been incorrectly labeled as spam senders. Any advice (to fivelines.org) would be greatly appreciated.

Mike Emerson
Youth ministry coordinator
Five Pines Ministries
Berrien Center, Mich.

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.



More online! www.nwfusion.com Find out what readers are saying about these and other topics. **DocFinder: 1623**



opinions!

Windows regulation

Regarding Mark Gibbs' Backspin column "Nightmare or regulation, your choice" (DocFinder: 1625): I agree that regulation of Windows would help ensure a more secure product. What worries me is that Microsoft has the opportunity to embed whatever it wants in every machine that downloads a "security patch." No, I'm not paranoid (much), but Gibbs is right that anybody, including Microsoft, has the capability to install code in every Windows box that connects to the 'Net and those that don't (by any software additions).

I wonder, with all of Microsoft's resources and the outrageous prices it charges for its software, why we are not sold a reliable product. The joke about GM building cars like Microsoft builds operating systems is true — any other manufacturing operation would be laughed out of business (unless they had a monopoly, of course).

Bill Roberts
Hanover, Md.

No economies of scale

Regarding Ken Presti's column "Wrangling over services revenue" (DocFinder: 1626): Certainly, there is growing competition between vendors and their channel partners over professional services revenue. But to say "a strong vendor presence in the local services market can reduce competition as a result of the vendor's economies of scale" is absurd. There is no such thing as economies of scale in professional services or in services in general.

The heart of the issue is account control and division of labor between a vendor and a partner. The latter issue affects service revenue/margin splits.

Sid Hanna Saleh
Editor and publisher, Services Revenue Newsletter
Center for Services Marketing
Golden, Colo.



PACKET EVANGELIST

Steven Taylor

In the words of baseball legend Yogi Berra, "It's déjà vu all over again." For years we've struggled with the organizational side of convergence for voice and data. We've also struggled with the LAN folks vs. the WAN folks. Now we have another area of networking where the technological innovation has advanced beyond most companies' organizational charts. This time the issue is integrating the applications people with the network people when considering Layer 4 to Layer 7 traffic management.

Layer 4 to Layer 7 traffic management is quickly coming to the forefront as a major issue for most companies over the next couple of years. The idea is great: Rather than simply providing a network consisting of Layer 1 bit pipes or using slightly more intelligent packet-based architectures, the network should be aware of the actual application content. Consequently, performance can be enhanced and network costs can be minimized.

In reality, the entire Layer 4 to Layer 7 traffic management area represents the convergence of multiple prior-generation point products into one product. In one of the more basic manifestations where only two network products are involved, combining compression and traffic shaping based on IP parameters enhances throughput, compared with applying compression and traffic shaping separately.

At the same time, the next generation of Layer 4 to Layer 7 products, sometimes called application front-end processors, are reaching into the data center. These products combine historical application point solutions with network point solutions. Features such as server load bal-

The real traffic mgmt. challenge

ancing and Secure Sockets Layer acceleration are combined in one appliance with compression and traffic shaping. Other appliances provide insight into WAN performance by looking at performance characteristics from within the LAN.

The ultimate success of implementing these products depends primarily on the organizational convergence to support them. After all, Layer 4 to Layer 7 traffic management can be implemented only if the network people and applications people talk to one another.

In a recent survey at Webtorials, a site for planners of next-generation networks, we asked more than 400 respondents worldwide to indicate the level of convergence between the personnel responsible for applications and those responsible for the network infrastructure within their organizations. Less than one-third of the respondents indicated that the network folks and applications folks were part of one integrated organization. Only one-fourth indicated that they had significant cross-training, even though they were in functionally separate organizations. Just less than one-third of the respondents indicated they had functionally separate organizations, with the convergence occurring only at the CIO level. And a significant percentage — 12% — had totally separate organizations.

The benefits of Layer 4 to Layer 7 applications management are tremendous. But to take full advantage of these capabilities, make sure your organization is converging along with the technology.

Taylor is president of Distributed Networking Associates and editor/publisher of Webtorials.com. He can be reached at taylor@webtorials.com.

Make sure your organization is converging along with the technology.



REALITY CHECK

Thomas Nolle

You're eating dinner after a hard day's work, and the phone rings. It's a telemarketer. "Hey, I'm on the 'Do Not Call' list, so stop calling me," you say. He laughs and keeps calling, every 10 minutes, day and night, forevermore. Sound like a nightmare? Maybe not.

What keeps telemarketers from calling day and night? It's not just that there are laws against it; it's that the telemarketers can be identified and made subject to those laws. Suppose telemarketing invaded the VoIP world, creating "vam" instead of spam? What's to stop a telemarketer using VoIP from spoofing a calling address the same way spammers spoof e-mail addresses? Why couldn't a big server in some offshore haven generate zillions of Session Initiation Protocol (SIP) calls with these spoofed addresses?

What kind of VoIP we get is likely to depend on how pushy we are about the problems of vamping. The time has come to recognize that Internet freedom means letting people protect themselves and to look more closely at VoIP service technology.

The standard for VoIP, SIP, establishes an open model where users have IP phones linked to the permissive Internet infrastructure. In theory, anyone who can locate such a phone via scanning can call it, and with the cost of an Internet call near zero, this model invites vamping as soon as the community of open VoIP users gets large enough to exploit. Fortunately, this isn't a popular model among VoIP providers.

What is popular is a closed model, some version of which nearly every VoIP provider uses today. Under it, users have IP phones that are in some way isolated from the open and uncontrolled Internet community. Some providers, such as Skype, are partitioning through the use of proprietary protocols and encryption; others, such as Verizon, are looking at doing VoIP over a true VPN. Either of these approaches would limit access to VoIP customers by outsiders, including telemarketers.

In a closed model, users can be authenticated, which makes enforcing civil or criminal penalties possible. In theory, VoIP users in these

Will 'vamping' plague VoIP?

closed systems could demand that their carriers filter out calls from sources not subject to U.S. telemarketing laws. If all members of a VoIP community are identified, and called parties can refuse calls that are not subject to prevailing telemarketing or other consumer legislation, it would work like the public switched telephone network.

The devil might be in the details of how this would be done. SIP has mechanisms for trust and authentication, but there is still a question of how multiple VoIP carriers would exchange the trust information on their members and whether you can trust someone else's customers. A maverick VoIP carrier might become a leak through which vammers can enter. A vammer might set up someone as a kind of Trojan horse, entering a closed VoIP community and vamping for a few days, then disappearing. It's like a spammer adopting a temporary e-mail account.

Right now, we've got an IP voice model that's not successful enough to be targeted, but that's going to change. Carriers should be expected to present not only an inexpensive and reliable form of VoIP, but also one that can protect consumers from vam. For VoIP to work, we need strong authentication of user identity and location, and a reliable way of exchanging identity trust between carriers. We'll also need technology to detect abuse and quickly shut it down.

We've messed up e-mail by letting the problem of spam get ahead of our ability to deal with it. We can't afford to do the same thing with VoIP. We need VoIP carriers to address three essential issues: how they will authenticate their customers' identities; how they will let customers bar calls that can't be made subject to telemarketing enforcement; and how they will exchange identity information reliably when the caller and called parties are on different networks.

Voice calling is essential in today's market. Uncontrollable calling is intolerable, and a few good vam horror stories will stop VoIP progress in its tracks.

Nolle is president of CIMI, a technology assessment firm in Voorhees, N.J. He can be reached at (856) 753-0004 or tnolle@cimicorp.com.

Suppose telemarketing invaded the VoIP world, creating 'vam' instead of spam?

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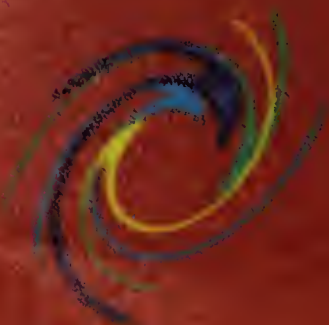
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FEW NETWORKING PROFESSIONALS GO A WEEK WITHOUT HEARING complaints about the slow speeds they're getting at the remote office. The natural response: Upgrade bandwidth. But with more conservative IT budgets and no guarantees that the faster link will support applications and staff for the next six months, much less the next year, throwing bandwidth at network problems isn't always the best fix.

As corporate networks become larger and faster, ensuring that they're smart and efficient has become a huge challenge. Networks and the demands placed upon them are ever-changing. It never fails: The moment a network manager thinks he or she has everything running efficiently, change ensues—whether a new application or an increase in the number of employees.

Rather than pounding their heads in frustration, network and IT managers should take note of some emerging options available to simplify the WAN design and operation. One of the growing areas of interest to IT executives is network-optimization products and services, which can help IT staffs retool their network infrastructures, predict potential problems, and better plan for the future.

First, it's important to understand what's driving this insatiable demand for bandwidth. An overwhelming number of employees—87% to be exact, according to Nemertes' research—work at locations other than a headquarters building or corporate campus. Perhaps it's a large regional facility, a warehouse, a small sales office, a retail store, or even a home office. The bottom line is that they rely heavily on a wide-area network to access the applications that let them do their jobs. Furthermore, two-thirds of IT executives say they expect their companies will hire even more remote workers moving forward. Rather than expanding office space in often—expensive headquarter cities, companies are extending their virtual boundaries and paying “rent” to carriers for circuits rather than landlords for physical space.

That's not the only major trend underway. Most organizations are seeing their bandwidth requirements skyrocket—often reporting growth in the triple digits. Accounting for that growth is the fact that companies are increasingly “pushing” applications out to the remote workforce, as well as adding new applications—such as IP telephony and Web services—that consume additional bandwidth. That

Written by Robin Gareiss, Principal Research Officer at Nemertes Research

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means applications that once were restricted to (and indeed only needed in) the LAN must be extended nationwide and often globally, affecting everything from security policy to disaster recovery to switching fabrics. New applications have arisen that are now "mission-critical." And a demanding workforce won't tolerate slow response times. What this trend indicates from an infrastructure perspective is a need for more bandwidth.

Or does it? For years, companies have thrown bandwidth at network performance problems. But network optimization products and services rely on technologies such as compression, caching, route optimization, and quality of service to reduce the amount of bandwidth that applications consume.

Because the ROI typically is a compelling three months to 12 months (for circuits at T1 and below), network optimization is gaining traction among organizations. On average, the first-year costs for bandwidth optimization on a 128 kbps circuit are \$4,108 (73% of remote office circuits are 256 kbps and slower; 25% of regional office circuits are 256 kbps and slower). Upgrading that circuit can yield annual cost increases ranging from \$3,600 to \$12,000, the higher prices on international circuits. (See "Total Bandwidth Optimization Costs" below).

Total Bandwidth Optimization Costs - Year 1		
Item	128K	T1
Device	\$2,590	\$9,606
Installation	\$1,000	\$1,000
Total One-time	\$3,590	\$10,606
Maintenance	\$518	\$1,921
Total Year 1	\$4,108	\$12,527

However, many IT executives don't use network-optimization technology because they're skeptical of it, don't have time to assess it, or are unfamiliar with the players, according to Nemertes' "Maximizing Your WAN" research series, which gathered input from 100 IT executives. (For a short list of vendors, please see textbox.)

So what exactly is this technology and how does it work? To start, Figure 1, "Typical Network Performance Problems," identifies some fundamental problems with WAN communications. In some cases, there's simply not enough bandwidth, causing congestion, latency, dropped packets and overall poor performance. In other cases, there are no quality-of-service parameters set, so latency-sensitive applications don't perform well. Furthermore, latency also can be caused by the nature of TCP/IP, as further packets aren't sent until acknowledgements of the previous packets are received. This latency may not be troublesome, but the bandwidth—and route-optimization vendors can implement some techniques that reduce latency by 30% or more. The effect is that end users receive the information they need faster (For instance, think of loading a Web page that's moderately slow versus one that's moderately fast.)

A few key techniques are available to address these problems to improve overall performance and reduce costs. Each has its advantages and disadvantages. But when used together or when used individually for the appropriate applications, the results are an increase in available bandwidth ranging from 100% to 500%.

COMPRESSION

Compression algorithms essentially reduce the actual size of data and files traveling across the network. By replacing repetitive information with tokens of smaller size, compression tools reduce the size of the files, freeing more bandwidth.

The challenge is leveraging the benefits of compression without compromising network performance. The most common compression technique, the

Lempel-Ziv or LZ compression, breaks data files into frames. Each time the compression software finds a repetitive string within the frame, it substitutes the second and subsequent strings with a pointer that states what to use in its place. For instance, take a look at the data in this sample frame:

Mariana Inc. asks its customers to be patient.
Mariana Inc. asks this because it is trying to help
customers in the long run.

The compressed frame might look like this:

Mariana Inc. asks its customers to be patient. ***
asks this because it is trying to help *** in the
long run.

The first *** basically says "go back 52 bytes from the current location and replace with the next 12 bytes." The second token does the same for the word "customers."

The problem with this approach is that it breaks long files into frames. If "Marina Inc." were in subsequent frames, the algorithm couldn't refer back the "Marina Inc." in an earlier frame. That makes the compression less efficient. The obvious solution is to make the frame sizes larger. This is fine for static text files that aren't being transmitted across a network with time constraints, but it's not possible for those that are sensitive to latency because larger frames would increase the delay. What's more, this type of compression doesn't work at all on pre-compressed data, such as ZIP files, images or videos.

CACHING

In their earliest versions, caching tools helped improve response time on the Internet. By storing and regularly updating Web site content on cache servers scattered in data centers across the Internet, ISPs could deliver cached content from a server closest to the individual requesting it. That way, less content had to travel across the circuits and routers that made up the Web.

The problem is that Web caching products don't support other non-http-based apps, such as enterprise-resource planning or customer-relationship management. Vendors have since developed enter-

prise caching products that essentially do the same for business networks. Typically, they work with compression. Here's how it typically works: A device sits on each end of a circuit and looks for repetitive data (each vendor uses different compression algorithms to do this). When it finds repetitive data or images, it replaces those with a token. That token then sits in the "cache memory" of those devices. When the packet leaves site A, it's compressed and the repetitive data is replaced with a token stored in the cache. On the receiving end, the cache reassembles the packets to their original forms.

Several options exist for Internet routing. Companies can use Web cache tools, which store http content on various local servers and deliver it to the nearest end users, alleviating the need to send traffic across the entire network. Numerous Web cache vendors offer such products that sit in corporate data centers. For those who don't want to manage their own cache servers, providers offer the function as a service, known as "content-delivery networks," for both high-content ISPs and enterprises.

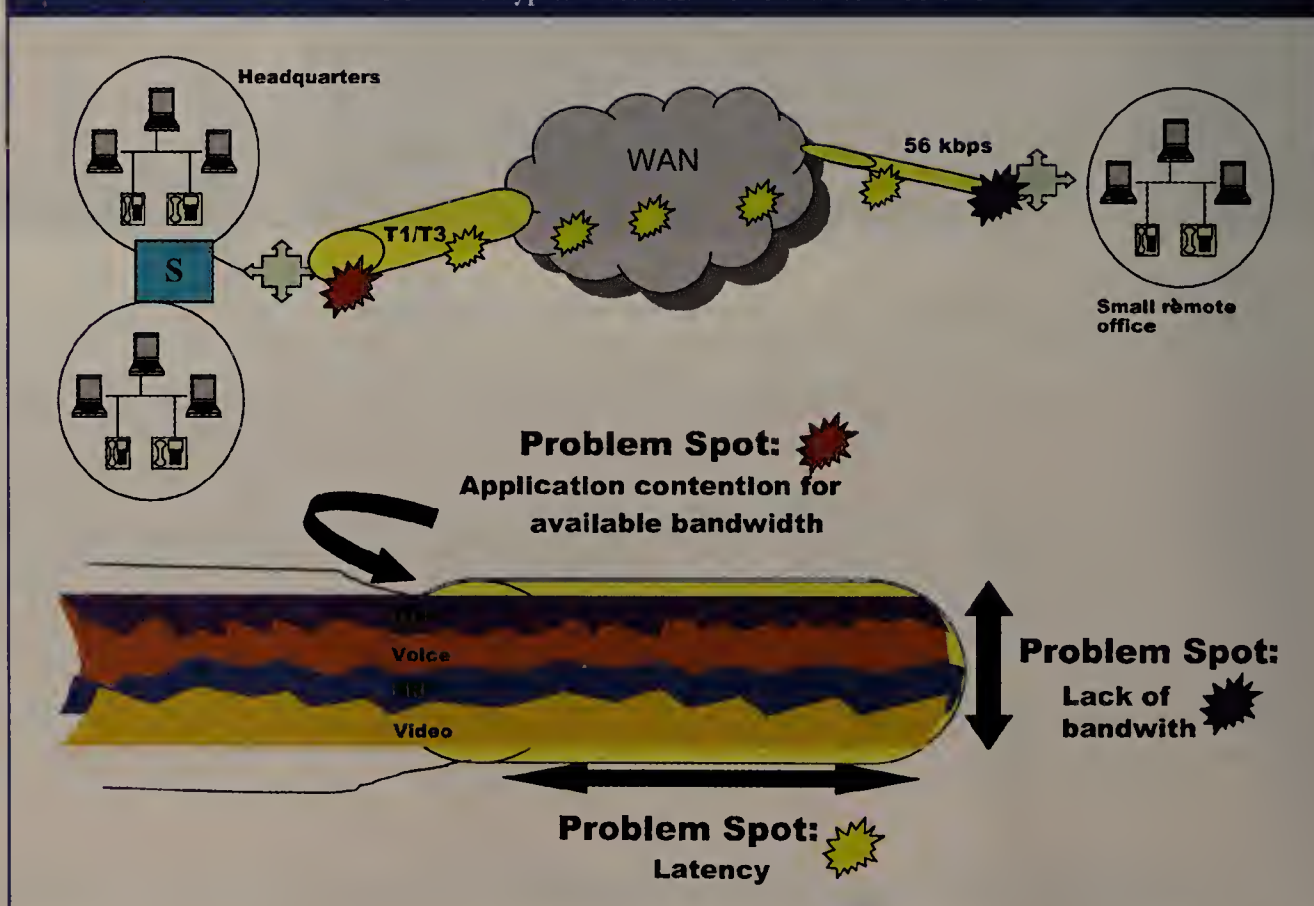
QoS

Compression and caching technologies reduce the amount of traffic that traverses the network. They free up some bandwidth, but they don't determine which network traffic gets priority, or which would make the most efficient use of the newly freed bandwidth. QoS tools, which come in all forms (within routers, within bandwidth- and route-optimization tools, and in stand-alone products) tell the router which traffic gets priority over which. They also give administrators the ability to preset how much bandwidth to "reserve" for each application, which they can alter, based on time of day or month.

Some of the tools offer granular application control by assessing contents at Layer 7. For example, they'll look at specific URLs, while Layer 4 tools will look at port numbers to determine Web traffic. The tools provide solid management and monitoring capabilities that deliver insight to network performance, and enforce policies by application and time of day.

Most routers and switches provide QoS capabilities, but they're more limited than the above-mentioned tools in that they simply prioritize applications based on IP addresses or TCP/UDP port numbers.

FIGURE 1: Typical Network Performance Problems



Ready to take traffic management to the next level?



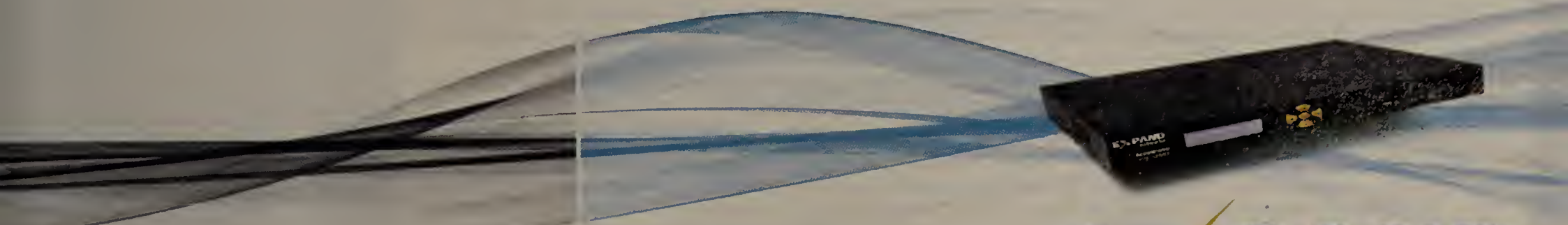
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Packeteer	Peribit
Redline Networks	

QOS Products

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Expand	Extreme
Lucent	Netcelera
Nortel	Peribit
3Com	Sitara

Route Control Products

Proficient	Radware
RouteScience	

Route Control Services

Equinix

Route Control Products and Services

Internap

Web Caching Products

Cacheflow	Cisco
F5 Networks	Inktomi
Stratacache	

Web Caching Services

Akami	Digital Island
Equant	MCI
Speedera	Sprint

NETWORK SIZING

Rarely is an IT staff completely comfortable with the amount of bandwidth, or the capacity of the circuit, on the WAN. Typically, applications use all the bandwidth available to them at any given time, which creates contention among applications and causes performance to suffer. Though the techniques above can help reduce traffic, decrease latency, and prioritize applications, often the amount of bandwidth simply isn't enough for the applications and number of users at hand. We find this to be particularly true when companies converge voice, data, and video traffic on a single network without conducting a thorough baseline QOS analysis prior to adding the new traffic types. What's more, companies have increased LAN speeds much more than they have increased WAN speeds, so there's essentially a greater mismatch between the two than there has been in the past.

ROUTE OPTIMIZATION

Route-optimization tools and services have two primary goals: to improve the performance of Web-based traffic by managing the links between multiple ISPs; and to reduce costs by sending traffic along the cheapest route at a given time based on pre-established parameters. Because the Internet is a network of networks, each with erratic and fluid performance characteristics, it's virtually impossible to have extremely predictable traffic flows.

Companies with dual-homed or multi-homed Internet access can buy products that sit on their own networks and determine the best path for the traffic.

Or, they can use services that do the same for them—essentially, the customer buys one large access line into the provider, which in turn links to multiple ISPs and uses sophisticated tools to determine how to best route the traffic. Basically, they analyze response times and send traffic along the route that offers the best performance at a given time, within pre-set parameters that take into account pricing plans.

The tools have a nice side benefit, too. By gathering performance data on the links, they can validate whether ISPs are meeting their service-level agreements (SLAs).

The route-optimization market segment has consolidated quite a bit in the last few years, but some viable players still exist. IT professionals can use either products or services to improve performance and cost-effectiveness of their Internet traffic.

VITAL INFORMATION: IMPROVED MONITORING

A huge value that comes with most network-optimization tools is information. The insight these tools offer about network performance, traffic patterns, and users helps network managers impose optimal designs.

By providing companies with some basic information, such as the type of traffic and applications that run across the network—and how much bandwidth each traffic type uses—network architects can ensure that the precious bandwidth that is available isn't overrun by non-business apps. "We do plan to use [the technology] to cut down on peer-to-peer traffic," says the CIO of a university. "We will look at bandwidth optimization if it becomes a problem. It will start hitting us when we put video on the network; that will happen one year from now. Then, we will need some tools. I thought I might have to deal with it with the voice traffic, and I'm getting ready for the video on the network. That will be when I really start looking at managing bandwidth."

MARKET OPPORTUNITIES

Given the growth in the number of remote workers, the increasing demand for faster speeds, and the rise in Web-based applications and Web services, the network-optimization market is ripe for growth. When compression first emerged on a large scale, its purpose was to make slower modems perform better. But when the modems got faster and broadband entered the picture, the idea of "compression" faded in many respects. If these tools were solely "compression," for instance, they wouldn't be as integral to designing efficient network. But because the vendors are focused on myriad problem-solving capabilities, they have a broader appeal.

By focusing on not only compression and caching, but also on management, QOS, and latency-reduction, the vendors have poised themselves to become essential to well-designed networks. One such opportunity centers around professional services, which can conduct network-optimization assessments.

Others include partnership with voice-over-IP vendors, so that organizations that are converging their voice and data networks can design an efficient infrastructure. According to Nemertes' "Implementing IP Telephony" study, 64% of enterprises are using VOIP (in some capacity—many are just starting small rollouts) and 20% are running trials.

The addition of bandwidth-optimization tools to VOIP vendor products would provide much-needed, value-added help and control with network design and ongoing management.

And finally, partnerships with carriers ultimately will respond to user demand for optimal networks. A small number of large companies that outsource network management to the carriers already mandates that the carriers use bandwidth-optimization gear to maximize network performance. Though the carriers don't offer bandwidth-optimization as an "official" service, many provide it "unofficially," and charge a management fee for the service. (After all, the more optimized a network is, the less bandwidth that customers need, which naturally decreases revenue for the carriers.)

Network optimization will become more crucial as networks become more complex. Demands for faster speeds won't die down anytime soon, and organizations don't have an endless budget for additional bandwidth. So making the most of the existing infrastructure will become the hallmark of a well-designed, cost-efficient network moving forward.

Product Assessment & Selection

Unlike with other areas of networking, IT professionals are not spending a lot of time comparing and contrasting vendors in the network-optimization space. Typically, a vendor approaches them with a trial product, they try it, they like it and they buy it. Considering that more than one-third are unfamiliar with the technology and 25% don't have time to evaluate it, we wouldn't expect companies to devote many resources to extensive product testing and assessment.

However, we do recommend that companies take advantage of the willingness of the equipment vendors to provide free trials of their gear.

Order equipment for a free trial from two vendors for side-by-side comparisons on your most heavily used circuit (one that's ready for an upgrade would be good), paying particular attention to:

- the amount of time it takes to get the equipment delivered;
- the amount of time it takes to install the equipment;
- the complexity of the installation;
- how quickly you see bandwidth availability increase;
- what network or application visibility you gain;
- how easy it is to set policies to leverage that information;
- vendor responsiveness and customer service.

Then, create a weighted spreadsheet and rate the vendors on each of the above-mentioned areas. Calculating a quick ROI will illustrate whether the price/performance trade-off is worth further exploration. In most cases, it will be. Then, negotiate with the vendors for the best prices. Running a trial with more than one vendor may be more time-consuming, but it will yield more leverage during price negotiations.



ABOUT THE AUTHOR

Robin Gareiss is Principal Research Officer for Nemertes Research, where she develops and manages research projects, conducts strategic seminars, and advises key clients.

For the past 14 years, Robin Gareiss has worked closely with hundreds of senior IT executives across a range of industries, analyzing and understanding their use of technology and capturing and quantifying best practices. A widely recognized expert in wireless networking, telecommunications, data

communications, network performance, and Internet infrastructure, she has won industry awards for her insight into these technologies and their business and market impact. She is a sought-after speaker at conferences and trade shows, including Supercomm, Telecom '97 and '99, CeBit America, and Network + Interop. Ms. Gareiss also has personal experience managing operations and developing new product offerings. Her entrepreneurial experience includes co-founding and overseeing marketing and business development for American Eco-Systems Inc., a water-purification business in Illinois and overseeing several successful fundraisers for children's cancer and other charities.

Linking Network Management and Business Success

Lucent Technologies VitalSuite® software syncs up business and IT goals by delivering dramatic improvements in IT and end user productivity.

IDC finds VitalSuite® software delivers cost savings, rapid ROI

	Average Three-Year Savings
Increased user productivity	\$10,303,465
Increased IT staff productivity	\$9,167,166
Increased IT staff efficiency	\$1,623,121
Other benefits*	\$345,844
Total	\$21,439,596
ROI	719%
Payback	133 days

*Includes recaptured revenue and savings from reduced capital and IT travel expenditures, virus avoidance and lower outsourcing costs.

SOURCE: IDC customer interviews, 2004

"When we purchased the product, we had two people handling 500 devices. Now we can handle 5,000 devices with only four people."

VitalSuite® software customer

More than ever, enterprises understand that IT infrastructure must be aligned with critical business processes to ensure corporate success. IT and telecommunications analyst firm IDC has confirmed that Lucent Technologies VitalSuite® Performance Management Software portfolio helps enterprises achieve success by improving the management of key IT resources as well as the productivity of IT staff and end users.

The award-winning, industry-leading VitalSuite® portfolio is a set of four modular software components that monitor network and application performance, analyze and map network events in real time, quickly generate detailed reports about network behavior and measure performance from the end user's perspective. Collectively, these modules provide visibility into and control over the entire infrastructure from a central location, enabling IT to discover and address network

performance issues before they affect application delivery — and business results.

Smaller staff, bigger ROI

From its interviews with enterprises that employ VitalSuite® software, IDC found the product provides savings in many tangible ways, including increased user productivity resulting from improved network and application availability. IDC determined that, on average, network management processes required 30% less IT staff time after VitalSuite® software was deployed. The study also concluded that the software enabled customers to reduce IT staff by 12% over three years.

Taken together, the average savings for all VitalSuite® software customers interviewed by IDC was \$58,155 per 100 users. That translates into a return on investment (ROI) of 719% and an average payback period of just 133 days.

IDC found that VitalSuite® software can help customers deal with the increasing pressure to integrate new technologies into their environments, including Voice over IP (VoIP), wireless devices, Web services and even new hardware formats such as blade servers. The Lucent software also helps enterprises meet quality of service demands that relate directly to service quality and business value.

Actual customers, impressive results

One of the companies IDC interviewed installed VitalSuite® software following a corporate merger.

The two companies used different performance management tool sets, but the merged entity decided to replace both products with Lucent's network management software. "VitalSuite® gave us more information on capacity and traffic by protocol, which we thought was vital, and a greater range and flexibility of reports, which could be made specific to departments like marketing or shipping," the customer told IDC.

Another customer was enthusiastic about the system's reporting tool. "Before, you might have to wait two weeks for an administrator to create a report for you. Now, you can make your own reports in 10 minutes," the customer said.



Learn more about

Lucent Technologies award-winning VitalSuite® software

Download an IDC white paper detailing the findings from its interviews with VitalSuite® software customers.

Go to: www.nwfusion.com/lucent/VitalSuite

Yet another customer spoke of the tremendous IT productivity gains VitalSuite® software provides. "When we purchased the product, we had two people handling 500 devices. Now we can handle 5,000 devices with only four people."

Perhaps more importantly, IDC found that 48% of the total savings customers gained from VitalSuite® software came in the form of increased end user productivity, an average of more than \$3.4 million per year. That's the kind of figure that speaks to a truly sound alignment of IT and business goals.

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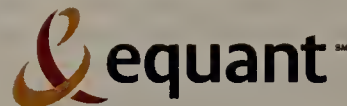
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CLEAR CHOICE TEST

Network configuration management

TrueControl from Rendition leads strong pack of configuration tools

■ BY GREG GODDARD AND CURTIS FRANKLIN, NETWORK WORLD LAB ALLIANCE

Dilbert comic strip creator Scott Adams once said, "Managing engineers is like herding cats." The same can be said for managing the configurations of your network equipment. The network's size, performance and security have made knowing and managing the configuration of individual components more important than ever.

Network configuration management systems should:

- Correctly establish the existing configuration of the network.
- Support a multi-vendor network infrastructure.
- Let administrators make one-time changes or automated changes based on established policies.
- Cooperate with existing network management and security components.
- Provide informative data through a reasonable management console.

We tested five products: AlterPoint's DeviceAuthority Suite, Dorado Software's RedCell, Rendition Networks' TrueControl 3.0, Tripwire's Tripwire for Network Devices (TND) and Voyence's Voyence-Control. Cisco, Gold Wire Technology and Intelliden declined our invitations.

Rendition's TrueControl wins our Clear Choice Award for the best network configuration management tool. While its user interface is not the most intuitive, it provides access to a wealth of detailed information. Its search capabilities and security model are certainly the most robust of any of the products. Its mix of compliance-detection and reporting are top-notch and overcome the lack of auto-discovery, which is easily provided using an external network management system. While TrueControl came out ahead of its competition, the other products fared well.

TrueControl

TrueControl consists of a secure management engine along with syslog and Trivial FTP (TFTP) servers. The TrueControl product stores its information in a SQL database, and does not force a network administrator to choose a specific database engine; TrueControl supports MySQL, Oracle and SQL Server 2000 installations.

The system does not provide device auto-discovery because Rendition says most customers will use an existing net-

work management system (devices can be imported using comma-separated value [CSV], formatted files). Device password rules are used to associate credentials with a device (SNMP passwords may be entered in addition to telnet and enabled passwords) and can be assigned to a specific device or multiple devices. TrueControl also can automatically configure a device to log messages to the system's syslog server.

TrueControl supports most vendor equipment, with Juniper being the one exception. (Rendition says Juniper is not on the list because its customers don't use Juniper devices in its networks. This shows that multi-vendor support in each of these products is heavily customer-driven.) The system integrates with a number of network management systems, including HP OpenView Network Node Manager, Nortel Optivity and Remedy ARS.

Rendition's system provided excellent search, audit and report capabilities — devices, modules, configurations, tasks, sessions and events all can be checked against specified criteria. TrueControl can make changes to the start-up and running configurations of network devices. Groups of equipment can be created to monitor and change configurations on a more easily managed basis. Read/write command scripts (as opposed to diagnostic scripts, which are read-only) can be created and issued to perform different tasks on devices or groups — commands sent to a particular device also can be recorded and "played back" at a later time. TrueControl can be used to deploy user and SNMP passwords, which makes a once-arduous task easy to complete.

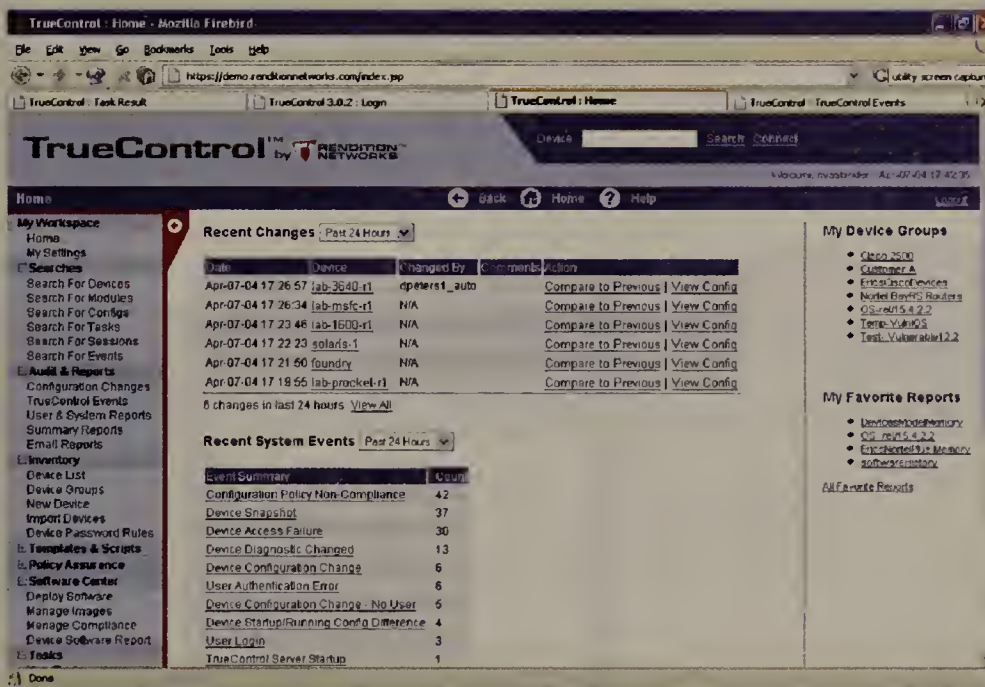
In our testing, devices had to be manually added because of the lack of auto-discovery. TrueControl correctly identified the more mainstream Cisco devices but did not correctly identify our MSFC3 or the Supervisor Engine 720 (see "How

we did it," page 39). The Cisco 10720s also came up unidentified. We received a new driver that added support for the MSFC3 and the Supervisor Engine 720, but were told that the Cisco 10720 is an unsupported device.

Once devices had been added to the inventory, configuration snapshots were taken. Configurations on our network devices were then changed, and True-

Control sent to administrators when changes occur.

TrueControl provides a Web and command-line interface (CLI) for users to access command functions. Although the Web-based user interface was fairly straightforward, it wasn't as intuitive as AlterPoint's DeviceAuthority. Like Voyence, Rendition always sends engineers on-site to install the product with



The screenshot shows the TrueControl web interface in a Mozilla browser window. The interface has a navigation menu on the left with options like Home, My Workspace, My Settings, and Search. The main content area is divided into sections: 'Recent Changes' (listing device changes with columns for Date, Device, Changed By, Comments, and Action), 'Recent System Events' (listing events with columns for Event Summary and Count), and 'My Device Groups' (listing various device groups like Cisco 2600, Cisco 3600, etc.). The 'Recent Changes' table shows several entries for devices like lab-3640-r1, lab-msfc-r1, lab-1600-r1, and lab-1600-r1, with actions like 'Compare to Previous' and 'View Config'.

TrueControl provided excellent search, audit and reporting capabilities for network devices, configurations and events.

Control let us view differences in three ways: contextually (showing us only the portions of the configuration that had changed), using a Unix-style diff view, or viewing the full text of the current and previous configurations side by side.

TrueControl detects real-time changes via its proxy interface (which lets telnet and Secure Shell [SSH] access each device in the inventory), SNMP traps and information directed at TrueControl's syslog server. Notifications and reports can be configured (Simple Mail Transfer Protocol [SMTP] alerts are one example)

the customer. The next release will incorporate advanced scripting support, best practices reporting, graphics capabilities and file system support.

DeviceAuthority

AlterPoint's DeviceAuthority Suite includes DeviceAuthority Server 2.0, DeviceAuthority Audit Module 2.0 and DeviceAuthority Update Module 1.0. The DeviceAuthority Server is the most important piece of the suite and provides services such as user credential management, device version control

and backup, scheduling, reporting and notification to the DeviceAuthority Audit and Update Modules. It incorporates multi-vendor support (20 vendors are supported). It also provides a repository of network configuration information that can be integrated with external network management systems and updated in real time based on changes received from TACACS+, RADIUS and the syslog.

The Audit Module is aimed at network managers and provides visibility into network devices and gives an administrator hardware, software and configuration details in real time or on a scheduled basis. Reporting, change notification and comparison, and configuration recovery are the key features of this module. Five predefined reports or custom reports based on one of seven report templates can be scheduled or generated on demand in a variety of output formats (HTML, PDF, text, CSV and XML). Notifications and reports also can be sent via SMTP on a scheduled or incident-triggered basis.

The Update Module is geared to the needs of network engineers and focuses on managing change in network components. AlterPoint lets each customer build an Integrated Network Environment that incorporates existing network tools and provides an actionable inventory that allows the execution of scripts based on this inventory. Key features of the module include the ability to schedule changes, generate scripts and perform validation of changes and search functions. Similar to TrueControl, the Update Module lets scripts be created by recording commands you issue to

a device.

Inventory lists can be populated by importing device information from a file or by manually adding entries. An auto-discovery wizard is also included. In adding a device to the inventory, credentials are specified and applied to each device. Shared credentials can be applied to multiple devices for networks in which devices all share common logon information. A user can specify that DeviceAuthority not poll devices during certain times, such as maintenance windows. The Audit and Update Modules work with the Server module to provide side-by-side device configuration comparisons to assist in tracking configuration changes and errors. DeviceAuthority can act as a proxy interface for telnet and SSH access to devices in the database.

DeviceAuthority auto-discovered each device on our network and had no problem correctly identifying and backing up configurations from the more mainstream Cisco devices. It had trouble with the Cisco 10720s (at first, it incorrectly identified them as C1070s and couldn't back up their configurations), the MSFC3 on-board the Supervisor Engine 720 and the Cisco 12000s. (In both cases, these devices came up unidentified.) AlterPoint delivered new device drivers for each of these devices that fixed the aforementioned problems.

AlterPoint officials say that extended search capabilities and an option for software management will show up in the next release. While compliance reporting is supported indirectly through searching, the next release will support a more robust set of policy and compliance features.

Tripwire for Network Devices

Almost anyone with system administration experience surely will remember running Tripwire to ensure file integrity on Unix systems. TND builds on the foundation of the file integrity assurance product but goes further by incorporating support for network devices. Tripwire has vendor-specific support for products from Check Point, Cisco, Extreme Networks, Foundry Networks, HP, Nortel and others, and says it can manage up to 100,000 devices.

TND can connect to TACACS+ or RADIUS servers to confirm the identity of individuals making changes to the configuration of monitored devices. This is part of TND's configuration security focus, as it reports the who, what, where, when and why (with specifics) of any changes. The security focus continues with a very full set of notification options when configuration changes are detected. E-mail notification and SNMP traps are included, as are device configuration restore and update rollback features.

Configuration information is transmitted via TFTP back to the Tripwire server, or communications can be secured by using SSH/Subscriber Control Platform (SCP). Staying true to its name, TND can capture output from nearly any network device you can log on to — it then can run regular expressions on the corresponding output. In addition to network device configurations, TND stays true to its ancestry by letting Unix files be monitored.

The built-in log viewer is excellent for isolating errors, and TND can share information with several applications through Open Database Connectivity/Java Database Connectivity (ODBC/JDBC) and XML

file connectivity. In addition, TND has direct hooks for many major network management frameworks, such as HP OpenView Network Node Manager, IBM Tivoli and Computer Associates Unicenter. A tool can run integrity checks against TND from a source outside the machine hosting TND, which assures administrators that the control system has not been compromised.

The most significant drawback was in establishing a baseline inventory — like TrueControl, TND doesn't support auto-discovery of network devices. Instead, we were forced to manually add or import a list of devices (through XML, CSV or ODBC/JDBC) from an existing inventory management system. Exporting the list of devices and configuration also can be done using those methods. Credentials can be added to a single device, or shared credentials can be established by assigning a credential to a variable and used across multiple devices.

Once devices were added to the inventory, it was easy to import their configurations. Once a configuration had been retrieved, it was marked as a baseline against which to compare subsequent configuration changes. When a change is detected, the device entry is highlighted and a contextual side-by-side comparison of the configuration can be viewed. An MD5 attribute is added to each configuration for security purposes. TND retrieved device configurations from nearly all of the Cisco devices in our network (including the MSFC3) with the exception of the Supervisor Engine 720.

While TND is a system with a lightweight footprint, it still can get the job done — as long as you carefully define the job and let TND work within a system of other network

Net Results

TrueControl 3.0

OVERALL RATING
4.83

Company: Rendition Networks, www.renditionnetworks.com. **Cost:** \$19,900 for 50 nodes. **Pros:** Very detailed permissions model; excellent search capabilities; software image management. **Cons:** No auto-discovery; user interface not as intuitive as it could be. **Requirements:** Solaris or Windows.

NetworkWorld
CLEAR CHOICE

DeviceAuthority Suite

OVERALL RATING
4.68

Company: AlterPoint, www.alterpoint.com. **Cost:** \$19,950 for 100 devices. **Pros:** Great user interface; Audit and Update Modules separate functionality between engineers and management. **Cons:** No software image library; lack of compliance reporting. **Requirements:** Windows (next release will incorporate support for Linux servers).

VoyenceControl

OVERALL RATING
4.65

Company: Voyence, www.voyence.com. **Cost:** Minimum system price starts at \$55,000; pricing derived from number of devices under management. **Pro:** Strong editing capabilities. **Con:** Currently unable to kill running jobs from the GUI. **Requirements:** Linux.

Tripwire for Network Devices

OVERALL RATING
4.65

Company: Tripwire, www.tripwire.com. **Cost:** \$19,995 for 100 devices. **Pros:** Lightweight but powerful; excellent regular expression capabilities. **Con:** No auto-discovery. **Requirements:** Solaris or Windows.

RedCell

OVERALL RATING
4.4

Company: Dorado Software, www.doradosoftware.com. **Cost:** \$12,000 list pricing. **Pros:** Detailed device information at the line-card, port and interface level. **Con:** User interface needs work. **Requirements:** Solaris or Windows.

The breakdown

	Rendition	AlterPoint	Voyence	Tripwire	Dorado
Configuration control 25%	4.5	5	4.5	4.5	4
Monitoring and reporting 25%	5	4.5	4.5	4.5	4
Multi-vendor support 10%	4.5	5	5	5	5
Security features 10%	5	5	5	5	4
Installation 10%	5	5	5	5	5
Documentation 10%	5	5	5	5	5
Special features 10%	5	3	4	4	5
TOTAL SCORE	4.83	4.68	4.65	4.65	4.4

Scoring Key: 5: Exceptional; 4: Very good; 3: Average; 2: Below average; 1: Consistently subpar

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management software. It's worth noting again that TND is the only product in this review that says it supports up to 100,000 devices (find out how many devices the other products support at www.nwfusion.com, DocFinder: 1629). Future releases will focus on enhancing device management, reporting and conformance checking capabilities.

VoyenceControl

Voyence begins a customer installation differently than most network vendors — it typically sends the customer a proof of concept (PoC) document to gather as much information as possible about the network before shipping and installing the product. Information gathered via the PoC document includes IP ranges that will be auto-discovered and network device information that includes vendor name, operating system version, interface type and protocols supported. Customers can have Voyence provide the necessary hardware (loaded with the VoyenceControl software before coming on-site), or Voyence can install it on-site with customer-purchased hardware.

VoyenceControl runs on Red Hat Linux, making it the only Linux-based server in this review. It is part GUI, part database server and part device server. The software has a great deal of flexibility in how it gathers information from network components — SNMP, TFTP, telnet, XML, HTTP and SSH/SCP all are supported. VoyenceControl integrates its alerts and configuration files with most of the major network management platforms, including HP OpenView, Tivoli, Unicenter, Micromuse Netcool, Remyd and other network applications. Information is exchanged with these systems via XML or CSV files. Scheduled events and complex sequences can be scripted, based on a proprietary Voyence scripting language.

VoyenceControl auto-discovered and identified all the devices in our network. It correctly identified some of the more troublesome devices (specifically, Cisco's 10720s and 12000s) that other products (DeviceAuthority, RedCell and TrueControl), couldn't identify properly. Like the other products, it had trouble with the MSFC3 onboard the Supervisor Engine 720 and incorrectly identified the Supervisor portion of the 720. Voyence shipped a new driver that was able to correctly identify the MSFC3 and the Supervisor Engine 720.

Once devices were added to the inventory, configurations were retrieved and marked as baselines. VoyenceControl has superb editing support (there are four types of editing in all) — the config editor lets you edit the entire configuration; the configlet editor lets you edit portions of the config across multiple devices; the interface editor lets you make changes to an interface across multiple devices; and the termlet editor lets you send commands to the router to verify network integrity or for troubleshooting/diagnostic purposes. Wizards let you automate Cisco configuration tasks. Job control is a particularly important feature within VoyenceControl — when a change is

made, the job must first be approved before it can be scheduled.

The system stands out because of its superb mix of simplicity and functionality. The GUI is easy to understand and manipulate for discovery and management, and it makes viewing information (model, operating system version and the like) gathered from your network devices easy. A feature that will be useful to those managing widely dispersed networks is VoyenceControl's location integration with MapQuest — maps generated by the software can be logical and geographical. Diagramming capabilities are included, but this is a feature best left to systems such as HP OpenView. Future versions will incorporate Visio support, a software image library and extend integration with external network management systems.

RedCell

RedCell is an integrated suite of products that allows extensive discovery and management of network configurations. RedCell Management Center is the core of the product and provides a multi-vendor management interface to each of the other products in the suite. The RedCell Net-Config module is vendor-specific and provides comprehensive configuration management capabilities, including the ability to back up, compare, restore and synchronize device configurations. Dorado builds RedCell on Oware, its framework for developing carrier-class applications.

RedCell supports a variety of vendor equipment. It's the only product in this test with device drivers that take specific advantage of the Juniper CLI, which lets two configurations be merged or a configuration change to be scheduled (via the Juniper device, not the configuration management system). Dorado also makes versions of RedCell that work specifically with Cisco, Dell, Extreme, Foundry and Riverstone Networks equipment.

Dorado's system was easy to stop and restart, either via the command line or an icon in the system tray. The tray icon changes color to indicate system status, showing red when services are stopped, yellow when initializing and green when the system is ready to use. The software runs on Solaris and Windows server platforms and will use all the memory you can throw at it.

In our test, RedCell accurately pinged and discovered all the devices in our network. All our Cisco components were accurately picked up as Cisco devices, although some were displayed as type CiscoRouter or CiscoSwitch instead of the actual model type. (To be specific, Cisco Multilayer Switching Feature Cards [MSFC] were identified as type CiscoSwitch, whereas Cisco 10720s were identified as CiscoRouters.) The Supervisor Engine 720 was discovered and correctly identified, but the MSFC3 portion of the device was not correctly identified as a Cisco device. Dorado shipped new drivers that were able to correctly identify the Cisco 10720s, but said that the Supervisor Engine and MSFC3 were currently unsupported.

When the device type is identified correctly, RedCell builds a hierarchical view of the device, complete with line cards, interfaces and ports — you can drill down to get detailed information (this is what Dorado terms "deep discovery"), add notes to specific interfaces, and change and edit device parameters. Configurations are easily backed up, restored or synchronized. Configurations on the same device or different devices can be compared side by side, but there is no contextual way to see what changes have been made. RedCell also includes a firmware and operating system image library and diagramming capabilities. The image libraries are a nice touch, but diagramming capabilities are probably best left to systems such as HP OpenView.

While the user interface is sometimes too complex for easy understanding and management — common actions such as perusing the equipment manager required significantly more hunting through screen items and clicking options than in the other systems we tested. Make no mistake, this is a very powerful system that is chock full of features.

Conclusion

It's important to understand that these

products are designed to be integrated into a larger network management and security infrastructure. They make extensive use of ports beyond those used by "normal" enterprise applications, so it is necessary to check access control lists and firewall settings to make sure the system can communicate with the devices being managed (and vice versa). Administrators who integrate these products into their infrastructures will gain substantial benefits in inventory and security control.

Goddard is a senior infrastructure specialist at EDS. He can be reached at ggodard@alummi.ufl.edu. Franklin is president of The CF2 Group, a Gainesville, Fla., technology communications company. He can be reached at cf2@bellsouth.net.

NW Lab Alliance

Goddard and Franklin also are members of the Network World Lab Alliance, a cooperative of the premier reviewers in the network industry, each bringing to bear years of practical experience on every review. For more Lab Alliance information, including what it takes to become a partner, go to www.nwfusion.com/alliance.

How We Did It

Our testing environment consisted primarily of these Cisco routers and switches: Cisco 3524s, Cisco 3550s, Cisco 3640s, Cisco 3745s, Cisco 6506s and 6509s, Cisco 7200s, Cisco 10720s, Cisco 12004s and Cisco 12008s.

Each product in the review had no problem correctly identifying most of the Cisco devices listed above. Cisco's Supervisor Engine 720, on the other hand, is a fairly new device. Located onboard the Supervisor Engine 720 is an MSFC3, Cisco's latest addition to the Multilayer Switching Feature Card family. We expected vendors to have quite a bit of trouble classifying and pulling configurations from these devices, and we were right. Vendors were notified that their products couldn't classify these two devices, and subsequently they shipped patches to their device drivers.

On each product, the following considerations were taken into account:

- Device configurations were changed to see how each product monitored and managed these changes.
- Devices were restored to a previously known "good" configuration.
- Noted compatibility with several vendors' devices (heterogeneous network device support).
- The ability to integrate with other network management platforms.
- The ability to schedule future configuration changes and look up past configuration changes.
- The ability to visually differentiate between configuration changes.
- Whether a product could be used to better troubleshoot a network problem/outage.

Other evaluated items included the use of access control (assigning permissions to groups, individuals or administrators), additional security features, scripting support, auto-discovery of devices, installation, ease of use and documentation.

We configured several clients ranging from 900-MHz to 2-GHz processors with 256M-byte to 1G-byte of memory, and servers with 1- to 2-GHz single processors with 512M-byte to 1G-byte of memory to test the Tectia 4.0 client and server components. We used Windows XP, Red Hat 9 and Windows 2000 as client machines, and Win 2000 Server and Red Hat Enterprise Linux Advanced Server as server machines. We exercised Tectia with various terminal access, file transfer and port-forwarding tests. We used password-based, Secure Shell key-based and certificate authentication. We tested Tectia 4.0 by using it to perform typical SSH user tasks, such as maintaining network servers, transferring files to Web sites and using it to port-forward e-mail traffic from Internet cafes.

NetworkWorld **SECTOR** **SPOTLIGHT**

CONSUMER GOODS MANUFACTURERS

How emerging technologies are transforming key vertical industries.



Manufacturers ready RFID rollouts

Driven by retailer mandates, suppliers are on the front lines of a battle to overhaul the supply chain.

■ BY ANN BEDNARZ

A wireless inventory system that's worked for tracking cattle is winning converts in the retail industry, but it's the suppliers who are getting prodded to adopt radio frequency identification.

Retailers such as Wal-Mart, Target and Carrefour say using RFID tags that can store and communicate detailed item identification data will allow for more accurate inventory management, fewer out-of-stock conditions, and less shrinkage, or product loss, throughout the supply chain than conventional barcodes.

This vision is forcing their suppliers to join the RFID revolution. Consumer packaged goods manufacturers such as Gillette and Procter & Gamble are launching feasibility studies, planning pilots and drafting implementation plans.

Wal-Mart, Target and Albertsons have imposed deadlines for their suppliers to begin shipping RFID-tagged pallets and cases. So too, has the Department of Defense, which is one of the nation's largest consumer goods purchasers. Wal-Mart's deadline is the most pressing: As of January 2005, Wal-Mart will require its top 100 suppliers to use RFID tags that each contain a unique identifier — called an electronic product code (EPC) — that is referenced in corresponding electronic transaction documents, such as advance shipping notices.

Such deadlines add urgency to RFID rollouts, which are not without complexity. Implementing RFID requires not only investing in the RFID tags and readers, but also linking the readers to supply-chain systems and designing new processes that incorporate the collection and dissemination of RFID tag data.

As one of Wal-Mart's top 100 suppliers, Henkel Consumer Adhesives is directly affected by the retailer's RFID mandate, says Gene Obrock, vice president of operations at the Avon, Ohio, manufacturer.

In 2002, Henkel identified RFID as a system that could help improve internal efficiency and customer relations. "Now that the mandate has been declared, we are glad we had already been researching this technology," he says. The company plans to have RFID active by late this year in its three warehouses.

The company is rolling out Manhattan Associates' RFID-in-a-Box. According to the vendor, the bundle starts at \$60,000 and includes RFID readers and tags from Alien Technology; a limited-license version of Manhattan Associates' Trading Partner Management application to generate RFID tags; professional services; and optional EPC printers to print the RFID tags.

Like Henkel, Larson Manufacturing Company already is thinking about future compliance. Ted Weinrich, MIS director at the Brookings, S.D., storm door maker, says his team has begun to discuss and research RFID.

"We're not pushing on RFID at the moment, but we want to make sure we're positioned properly when the

time comes," Weinrich says. "It's not an 'if' but a 'when.'"

While Larson doesn't sell to Wal-Mart, it does sell to Lowe's and Home Depot. When those retailers make technology decisions, Larson needs to be able to react quickly, Weinrich says.

Sensing a buying spree, vendors are rushing RFID products out the door. Software makers with retail and warehouse management expertise, such as Manugistics and Manhattan Associates, are unveiling RFID-enabled packages. ERP vendors such as Oracle, PeopleSoft and SAP are adding RFID capabilities to their suites, as are infrastructure software makers such as IBM, Sun, Tibco and webMethods. Countless services firms, systems integrators and consultants also are launching RFID programs.

Some vendors are going all out to help time-pressed consumer goods manufacturers. Sun, for example, built a 17,000-square-foot warehouse in Dallas that replicates a Wal-Mart site. The warehouse is outfitted with RFID readers, loading-dock bays and a high-speed conveyor belt. In this pseudo Wal-Mart environment, companies can test their RFID systems for compliance with Wal-Mart's standards — choosing which RFID tags to apply and where to place the tags, for example.

Elusive payback

Observers agree there's plenty of potential for ROI. RFID systems are expected to help boost retail and manufacturing revenue by decreasing out-of-stock conditions. Users also expect to reduce product-handling costs by moving to more automated processes.

However, realizing that ROI is another story. Management consulting firm A.T. Kearney reports that companies can generate significant savings in inventory and labor costs by adopting RFID technology, but that manufacturers will have to spend a lot of money upfront and will see few benefits in the short term.

Adding to the fuzzy ROI picture is that spending data is hard to come by. Most companies that have implemented the technology won't share their results because they don't want to lose a competitive advantage, according to Nigel Montgomery, a director at AMR Research.

What spending figures are available are often anecdotal. James Jackson, vice president of strategy and information at Unilever, reportedly told attendees at last

month's Global Retail Technology Forum in Barcelona that the London consumer goods manufacturer spends between \$1 million and \$2 million on each RFID pilot.

Spending on RFID pilot projects today runs about 90% services and 10% components, says Vijay Sarathy, group marketing manager for Sun RFID. One reason is for the high services ratio is that much of the effort is by hand. "Tag placement is such an art, people have to literally hand-wire a lot of these things," Sarathy says. That model won't hold up in a broad enterprise deployment.

Adding to the complexity is that manufacturers need to integrate their homegrown software with retailers' systems, says Jeff Richards, CEO of consulting firm R4 Global Services. "Until now, a manufacturer's software environment was its own and didn't impact partners.

CONSUMER GOODS MANUFACTURERS: AT A GLANCE

- **IT allocation:** Process manufacturing firms devote 1.12% of revenue to their IT operating budgets and 0.4% of revenue to their IT capital budgets, according to Gartner — significantly less than the overall averages of 2.84% and 1.38%, respectively.
- **RFID spending:** RFID spending for the U.S. retail supply chain will grow more than tenfold over the next four years, from \$91.5 million in 2003 to nearly \$1.3 billion in 2008, IDC reports.
- **Sector contributions:** The manufacturing industry contributed \$1.49 trillion (14.1%) to the gross domestic product in 2001, according to the Bureau of Economic Analysis.

Now they all have to have systems talking to each other," Richards says.

To get the full benefits of RFID, manufacturers must balance the immediate need to comply with RFID mandates with longer-term plans to retool collaborative business process around the new technology, says Larry Kellam, partner at consulting firm Kellam Group and a 35-year Procter & Gamble veteran.

"It's hard for most people to imagine changing work processes to capitalize on what RFID technology allows," says Kellam, who led Procter & Gamble into its RFID pilots. "But if all we do is think about using EPC as a replacement for the barcode, all we will have done is increase cost. That's a pretty bad trade."

For manufacturers that so far have avoided undertaking RFID pilots, Kellam's advice is to dive in. "Start using the technology on a limited scale. Buy 100 tags and a reader and software. Immediately follow by beginning to pilot," he says. ■



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Instilling IT governance

■ BY LINDA LEUNG

Determine what arrangement of decision rights and accountability works well for your organization.

Corporate governance is transforming boardrooms across America, and it also has a place in the data center. Gartner and the Massachusetts Institute of Technology Sloan Center for Information Systems Research together define IT governance as the decision rights and accountabilitys that encourage desirable behavior in the use of IT.

To establish effective IT governance, you need to get a handle on your

company's personality and set up the most appropriate decision-making processes between IT and business managers.

According to Gartner, there are three types of business orientations: synergistic, agile and autonomous. Knowing which one your company most identifies with is the first step to understanding what processes to implement.

Take the test

Use Gartner's quiz to determine your firm's business orientation.

1. Your company predominately aims for business processes that are:

- (a) Integrated and standard across all business units.
- (b) Modular, adaptable and able to be combined easily for new business initiatives.
- (c) Distinct to business units for local decision responsiveness.

2. Your company predominately aims for coordination to achieve:

- (a) Mandated synergies, minimized duplication and top-down innovation.
- (b) Front-line decision-making to enable rapid changes and recombination of assets.
- (c) Innovative capacity, primarily at the business-unit level.

3. Your enterprise predominantly aims for management systems in which:

- (a) Business units focus on business unit and enterprisewide strategies, following centrally defined and coordinated synergies.
- (b) Business units adapt to local conditions according to an enterprise-wide organizing logic.
- (c) Few mandated processes exist, and these are focused on financial and risk management.

If your answers were mostly (a), your company is synergistic. A good example would be a bank that provides integrated financial services to customers, with technology pulling multiple product offerings together. Departments need to be tightly integrated to present a single face to the customer.

If your answers were mostly (b), your company is agile. Examples could be entertainment firms or manufacturers, where the focus is on speedy decision-making and the ability to coordinate the efforts of all the business units.

If your answers were mostly (c), your company is autonomous. Although owned by the same company, each decentralized business unit makes its own decisions. Often, each unit is served by its own IT, human resources and finance functions.

Learn about governance styles

Once you've identified your company's business orientation, it's time to understand the six different IT governance styles — that is, the processes in which IT decisions are made.

- **Business monarchy:** The executive leadership -- usually a council of IT and business chiefs -- has the decision rights governing IT investment and prioritization.
- **IT monarchy:** The CIO (and business-unit CIOs, if applicable) has decision rights to IT architecture and infrastructure strategies.
- **Feudal:** Business-unit heads or their delegates have the decision rights, and authority could be localized.
- **Federal:** Corporate executives and at least one business group (which could be IT) share governance rights.
- **Duopoly:** Rights are shared between two groups, which could be IT and the business units, perhaps with a series of bilateral relationships with multiple business units. Alternatively, the two groups could be IT and a team of corporate executives.
- **Anarchy:** Individual owners or end users have decision rights. Decisions are made locally and on an ad hoc basis.

Consider the choices

The synergistic company: These tightly focused companies are best supported by a top-down technology mandate from an IT monarchy, says Marianne Broadbent, a Gartner research fellow. "The IT group works with corporate-level executives to set IT principles across the whole enterprise."

The business monarchy and duopoly decision-making styles are also applicable, Broadbent says. Such decision processes let synergistic companies maximize economies of scale and reduce duplication.

The autonomous company: The opposite of synergistic firms, autonomous corporations focus on the front lines rather than the data center. IT leaders usually work one-on-one with individual business unit leaders. The federal and feudal styles work well with these organizations, according to Gartner.

Under a federal model, the corporate and business units set principles of how IT will be used, but emphasize business unit autonomy. A feudal style would let business units make decisions on business applications, IT investment and prioritization, while the central IT group is responsible for IT infrastructure.

The agile company: Agile companies need to move quickly, particularly at the local business-unit level. However, everyone in the company needs to understand the ground rules before they can be let loose. At all levels, roles and responsibilities should be clearly defined. Gartner says business monarchies typically set principles at agile companies, while the duopoly decision-making style works well for IT architecture, investment and prioritization. ■





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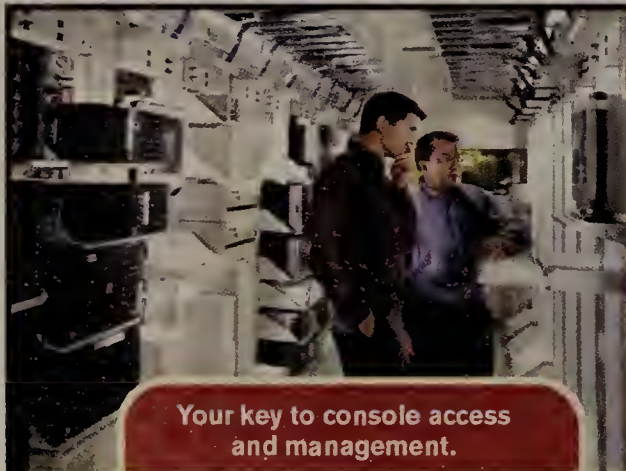
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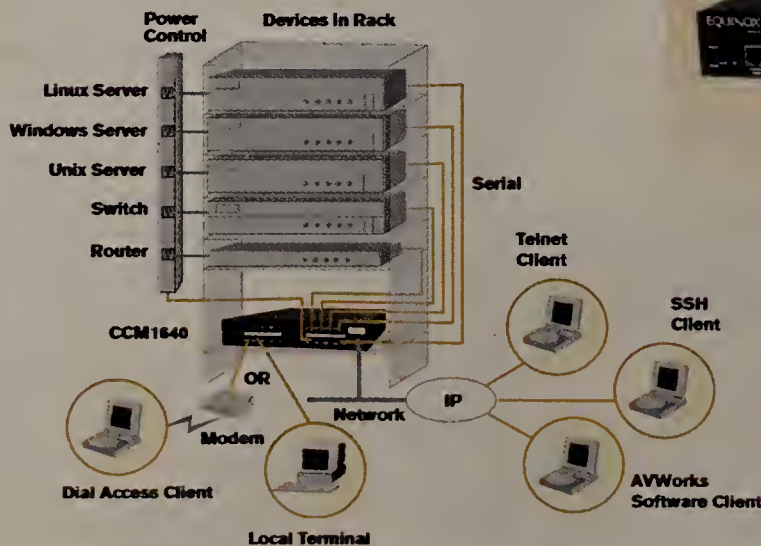
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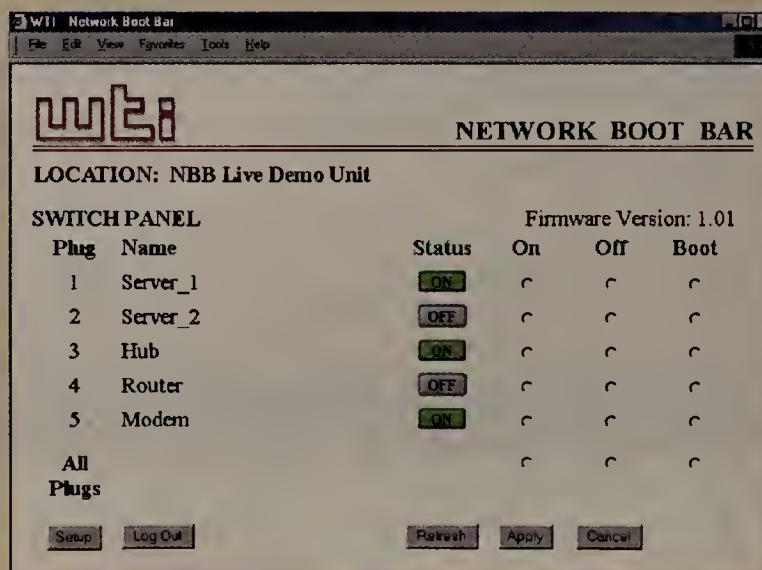
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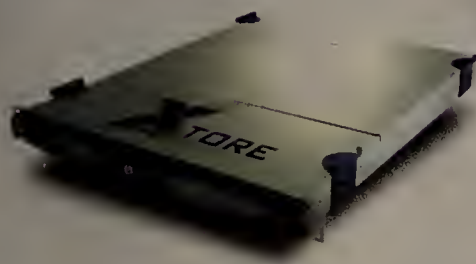
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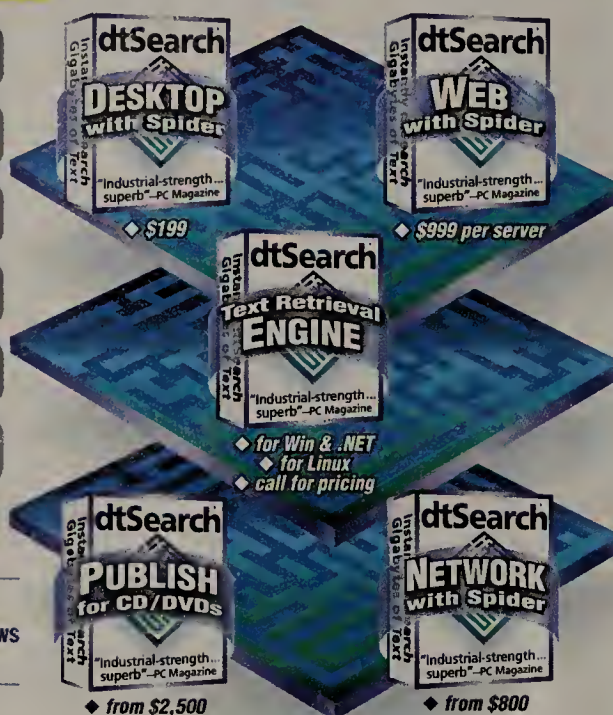
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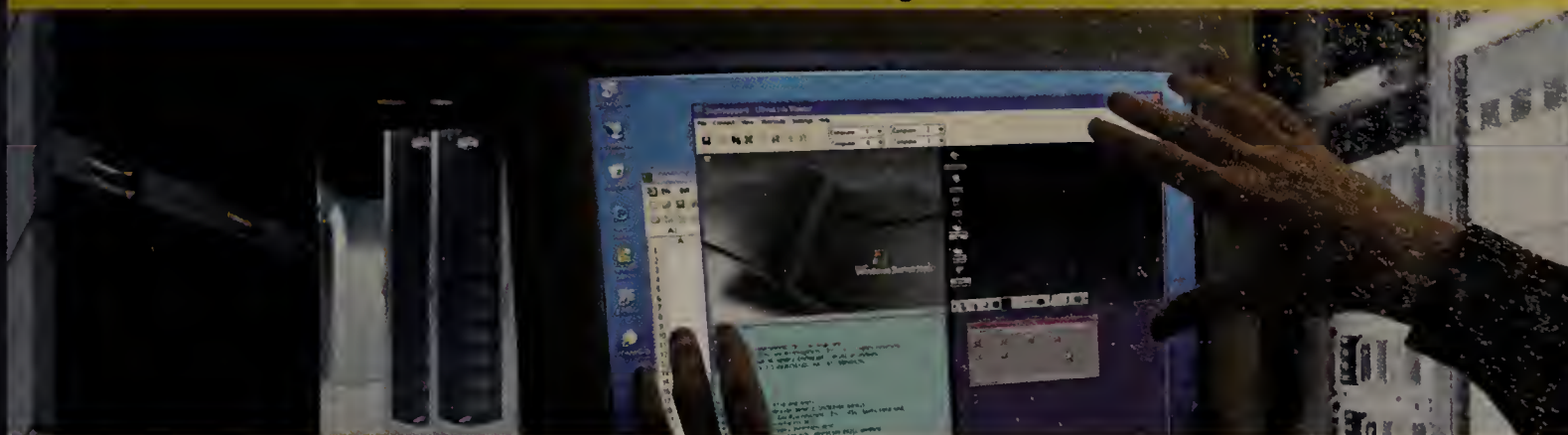


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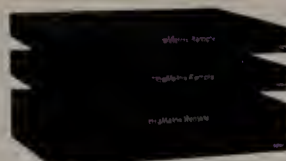


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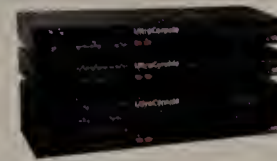
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IT Careers and Diversity

Talk to any senior business leader across the United States, and it takes little time to get around to a major concern — having enough technology workers for the future. It's a hard message to sell after three steady years of layoffs and off-shoring of work in the technology sector. The concern is real, however, as other countries boast of growing numbers of engineering and technology workers — workers who may create the next great breakthrough. Add to the competitive concern the recent uptick in hiring. Companies such as Lockheed Martin have announced plans to hire up to 60,000 new workers in this decade, in large part due to

retirements but also to fill the need for advanced technology workers.

The competitive issue is real, too. China graduated more than 300,000 engineers in 2003; India had more than 200,000. Here in the United States, the number of engineering graduates was slightly over 78,000.

It's one of the many reasons that the Information Technology Association of America, the National Action Council for Minorities in Engineering, and the Commission on Professionals in Science and Technology — along with individuals such as Tyrone Taborn, founder of Career Communications,

and companies such as IBM — continue to pound home the message: technology careers need to appeal to a broader range of society; we need more young people of color and who are female to seek tech careers.

Jim Sinocchi, spokesman for IBM's diversity initiative, said this year's Black Family Technology Week (founded by Taborn) and La Familia Technology Week scheduled for October 2004, continue to develop and reach out to more and more communities. The focus is on hands-on experience with technology. "The celebrities of science and technology are telling the story," Sinocchi explained.

This year's Black Family Technology Week in February showed applications of technology in everything from music to movie production. During La Familia Technology Week last fall, Miyea Major highlighted her use of computer data in identifying a previously undiscovered primate. It didn't hurt that Major could tell her story of transition — from professional football cheerleader to scientist. "There is not a metric on how well we succeed with young people," Sinocchi added. "You can only listen to how many questions they ask and the 'wow' factor."

While appealing to young people involves showing how technology leads to careers and role models, it also means showing them the schools that attract and retain diverse students. While these colleges are heavily weighted by geography and membership in Historically Black Colleges & Universities, another option is emerging — eArmyU. The U.S. Army's distance education programs offers coursework to enlisted soldiers, many of whom are minorities. eArmyU expects to serve 80,000 soldiers over the next five years.

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Tuskegee University	71
North Carolina State-Raleigh	64
University of Michigan	63

Top 10 Producers of 2001 American Indian BS Engineers	
Institution	# of Grads
Mass Inst of Technology	11
New Mexico State University	10
Oklahoma State University	10
University of Oklahoma	8
University of New Mexico	7
University of Washington	7
Worcester Poly Institute	7
University of Michigan	6
Tie for 9: Arizona State, Northern Arizona, Old Dominion, San Diego State, University of Alabama-Huntsville, University of Florida, Washington State University	5

Source: National Action Council for Minorities in Engineering

Top 10 Producers of 2001 Women BS Engineers	
Institution	# of Grads
Georgia Institute of Technology	330
University of Michigan	309
Penn State	249
University of Puerto Rico	222
University of California/Berkeley	218
Texas A&M	215
Purdue University	210
Mass Institute of Technology	207
University of Illinois-Urbana	183
Cornell University	182

Top 10 Producers of 2001 Latino BS Engineers	
Institution	# of Grads
University of Puerto Rico	695
Poly Univ of Puerto Rico	311
University of Texas-El Paso	137
Florida International University	118
Texas A&M University	95
University of Texas-Austin	88
University of Florida	86
Cal Poly Pomona	82
Texas A&M-Kingsville	65
New Jersey Institute of Technology	64

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Web Developer to design develop, and modify client/server and web-based software on a distributed architecture to develop fully interactive web-based e-learning applications including multiple media development using XML/XSL, HTML (cross-browser development), JavaScript, Dreamweaver, Flash, Java, MySQL, SQL, JSP, ASP, and .NET. Builds new functions and features on the website to improve the effectiveness of websites for business, consumer, and internal users using Java and JSP. Analyzes requirements, creates specifications, and develops horizontal and vertical software applications on Microsoft Windows platform. Develops, enhances, maintains and supports users with intranet applications. Requires Bachelor's Degree in Computer Science, Information Systems, or Information Systems Management and one year direct experience. Send resumes only, no calls, to: Traci Knudson, CFO, NogginLabs, Inc. 4619 N. Ravenswood, Ste 303, Chicago, IL 60640.

Systems Analysts (ERP/Financials): Analyze, design & administer enterprise apps. and systems including financials/transport Admin./Mgmt. in Lawson Apps. (Financials/Admin.), Oracle, SQL Server, Unix, AS400, COBOL, VB. For complete job description or to apply, send resume/contact HR/IT-SA, URSI, 10701 Middlebelt Road, Romulus, MI 48174. No phone calls please. Principals only. EOE.

Company seeks Sr. Software Eng. for design and development of object-oriented, distributed object, and component-based and web-based systems including multi-tier architectures. The Sr. Software Eng. utilizes relational d-base, ORACLE under Windows NT/2000 and UNIX (Sun Solaris, HP_UX) to dev. s/w in XML & Enterprise Java (incl. JSP, EJB, JMS, & Servlets components). Application servers utilized incl. Webshop & Weblogic. Object-oriented systems utilized include UML, Rational Rose, and Visual Cafe. Salary is \$75000/yr. f-t (40 hrs/wk). Min Req: Bach. or foreign degree equivalent in Computer Eng., Eng. or related + 2 years exp. in S/w Developmt using ORACLE under Windows NT and Unix (Sun Solaris, HP_UX) platforms in app. domains as follows: Enterprise Java (incl. JSP, EJB, JMS and Servlets), XML, and Object-oriented systems incl. UML, Rational Rose, and Visual Cafe. Pl. submit two (2) resumes to: Case #200204180 Division of Career Services Labor Certification Unit, 19 Staniford St., 1st fl., Boston, MA 02114.

SQL Server Specialist, Huntersville, NC, InterCerve, Inc. Manage database admin. services for InterCerve's managed hosting operations and lead the support and implementation services for a premier SQL Server tool. Reqs. BA in Comp. Science & 4 yrs. exp/ The 4 yrs must incl. work w/ SQL Server Admin. product dvlp. cycles & processes, Windows networking, Windows 2000/2003, Active Directory, Microsoft appl. dvlp. Exp. and .NET. 3 yrs of exp. must incl. work w/ T-SQL, DTS, BCP, replication, clustering, log shipping & writing & executing software acceptance tests. M-F, 8-5, Send resume to Human Resources, InterCerve, Inc., 16415 D. Northcross Drive, Huntersville, NC 28078. No phone calls.



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Salary: \$111,132/year. Work schedule is M-F 9am-5pm. Position requires: Master's degree in Business Administration, Public Policy Management, Engineering or Info Systems plus 4 years experience in the job offered in related occupation of Senior Manager, Manager, Senior Consultant. Experience in offered position or related occupation must include 1.5 years of experience managing programs for public sector agencies including drafting RFP (Request for Proposal) responses, risk assessment, scope management, and work plan development in addition to Business Process Re-engineering and analysis, Testing Tool WinRunner and Oracle.

Please send your resume, referencing Job Order Number WEB 406726 to: PA CareerLink, FLC Unit, 235 W Chelton Ave., Philadelphia, PA 19144. EOE.

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Translate business requirements into comprehensive analysis and design models using UML and Rational XDE/Rose. Build, test and deploy application and database components over Weblogic, Oracle8i, SAS and Unix. Assist in the development of asynchronous messaging infrastructures and contracts using JMS, XML, XSD, J2EE and JDBC. Position utilizes object-oriented analysis and design concepts such as patterns and frameworks. Req. 2 years previous experience. Prev exp. must involve developing analysis and design models using UML and Rational XDE/Rose. Apply to: BLC Consulting, 26 Jefferson Court, Wethersfield, CT 06109.

Programmer Analyst needed. Duties include performing maintenance, code and test existing programs; analyze and develop programs. Work with the following: VB, .Net, Oracle, Java and Tibco Integration Suite. Req.: 4 yrs of rel. work exp. or a BS degree or equivalent and 2 years of rel. work exp. MS degree preferred. Exp. must include 2 years developing mainframe, client/server, or web applications. No relocation. Mail resume, references and salary requirements to Inventory Locator Service, LLC, Attn: Human Resources, Job Code IS308, 8001 Centerview Parkway, Suite 400, Memphis, TN 38018.

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S/WEngineers to analyze, design, develop financial apps using OOD, C++, VC++, MFC, Visual Source Safe, SQL Server, Rational Rose, CrystalReports, RAIMA, ImageMan, ADO under Windows/UNIX OS; perform system/functional req analysis; document detailed project specs, review conceptual model with users; provide training/ user support for related software; perform debugging/modifications of existing software. Require: M.S. or foreign equiv in CS/Engg (any branch) with 1 yr exp in IT. High Salary. F/T position. travel involved. Resume to: HR, Autosig Systems, Inc., 201, Price Hills Trail, Sugar Hill, GA 30518.

Programmer Analyst. Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. Duties: Analyze, plan, develop, test and document computer programs including network communication programs. Evaluate user requests and software program requirements for new and modified programs. Write specifications, code, test and debug computer programs. Customize software to client needs. Use of Java, ATG Dynamo, Oracle, HTML, C/C++, Perl 5.0 and Windows NT. Reqs. Bachelor or equivalent in Computer Science, Computer Engineering, Engineering (any field) or related field. Plus 6 mos in the job offered or 6 mos in a related occupation, including Programmer, Software Engineer or Systems Analyst. \$66,000/year, 40hrs/wk, 8AM-5PM. Respond by resume to: WORKFORCE DEVELOPMENT PROGRAMS, PO Box 46547, Denver, CO 80202, and refer to Job Order No. CO 5073173

Software Engineers & Programmer Analysts needed. Exp. in Client Server Applications w/ ERP Packages & Web applications preferred. Seeking qual. candidates possessing AA/BS/MS degree or equiv. and/or rel. work exp. Send res., ref., & sal. req. to Saiven Info Links, Inc., 1425 Louis Ave., #104, Elk Grove, IL 60007.

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Software Engineer. Develop & implement web sites for client companies using Vignette & e-business s/w products. Integrate XML technologies & solutions into Java based framework & troubleshoot. Req: Bachelor's in Comp. Sci., Comp. Eng., Electrical Eng., or Business Mgmt. 40hrs/wk. Job/Interview Site: Long Beach, CA. Send resume to: UniSAP, Inc. @ 24881 Alicia Pkwy, Laguna Hills, CA 92653.

WEB DEVELOPER to design and develop customized web applications using C#, VB.NET, ASP.NET, ADO.NET, XML, ASP, JavaScript, VB COM and Object Oriented Design principles; create a central code base for rapid generating statistical analysis websites (CMI's QtabzTM); develop Windows-based applications to automate survey sample management; create VBA for statistical analysis of survey data; manage data in SQL Server 2000 with Triggers, Cursors, Stored procedure, Functions, DTS, and Full-Text Index search. Require: Bachelor's in Computer Science/Information Systems. Competitive salary offered. Apply with resume to: Vice President, ConsumerMetrics, Inc., 1745 Old Springhouse Lane, Suite 400, Atlanta, GA 30338.

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Affiliated Computer Services, Inc. (ACS) currently has an opening for a full time Senior Internet Applications Developer in its Lexington, Kentucky operations. Must have Bachelor degree in Computer Science or Engineering with 5 years experience in designing and developing web based applications using Java and ASP, including therein 2 years experience designing EDI and DDE applications according to HIPAA regulations using Cold Fusion. Must have authorization to work in the U.S. Please send resume by mail to: Technical Recruiter, 2432 Fortune Drive, Suite 120, Lexington, KY 40509 or via fax to 859-389-4182. No phone calls please. EOE

Systems Analyst (GA) Design, develop, code, test, debug & troubleshoot a variety of products in a client server environments using Oracle 2000, C & Visual C++ on IBM compatible PCs & UNIX based servers. Develop special modifications & internet accessing enhancements for SDL & MBB platforms applying Java, RMI, TCP/IP & EJB in Linux & Sun Solaris environments. Conduct change & impact analysis, quality reviews & engage in custom development of key modules. Bachelor's degree or equiv. in Computer Science or any Engineering or related field, and relevant experience. Send cover letter and resume to Vivian Fernandes, MBT International, Inc., 400 Perimeter Center Terrace NE, Suite 900, Atlanta, GA 30346.

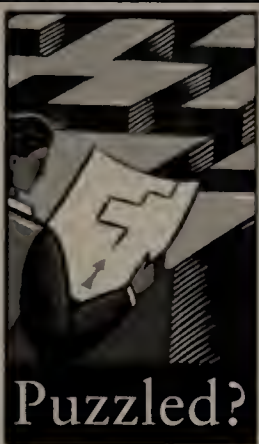
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System Developer: Design, develop, and implement software system for government Head Start and Pre-K program using C#.net, ASP.net and Microsoft SQL Server databases. Work with identified software problems to determine the sequence of events that cause the problem and to correct any deficiency. Involved in all phases of enterprise development including sequence diagram and class diagram. Req. BS or equivalent in CS or CIS. Must be proficient in C#.net, Developer Express Xtra-Grid Suite, SQL Server, Installation Shield and Crystal Report. MCSO Certificate required. 40 hr/wk, 9-5. Send resume to ChildPlus Software, Inc. at 1117 Perimeter Center West, Suite 300W, Atlanta, GA 30338.



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IT Systems Analyst. BS in comp. sci or rel. field exp. to incl J2EE app. servers, object oriented & internet technologies, distributed computing & enterprise connectivity, web app. dev., sys. admin. & monitoring tools, formal iterative dev. proc., & mult. platforms (Unix & Windows); demonstrated communication skills, knowl of insurance & fin. svces, & willing to travel & do on-call support. JOB#ACW23171. Resume & cvr ltr to: Principal Financial Group: opportunity@exchange.principal.com; HR Employment, Des Moines, IA 50392-0550. Refer to JOB #'s mentioned above. AA/EEO

Java Developer. BS in com. sci or rel. field; exp. to incl. Java (servlets & JSPs), struts, XSL/XML & DB2; demonstrated communication skills, knowl of insurance & fin. services, & willing to travel & do on-call support. JOB#ACW23171. Resume & cvr ltr to: Principal Financial Group: opportunity@exchange.principal.com; HR Employment, Des Moines, IA 50392-0550. Refer to JOB #'s mentioned above. AA/EEO

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Watts Up Inc. (Ossining, NY) seeks software professional to design, develop and implement business applications and software. Experience in Oracle, SQL, ASP, Visual Basic and ERP. (Navision) a plus. Competitive salary. Mail resume and requirements to: 187 Main Street, Ossining, NY 10562. EOE

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The work schedule is Monday-Friday, 9:00 am to 5:00 pm. The minimum requirements are as follows: Bachelor's degree or equivalent in Computer Science, Math, Engineering (any), Information Systems or Business Administration + 3 years of experience in the job offered or 3 years of experience as a Senior Consultant, Consultant or Senior Officer. Employer will regard a foreign degree to be equivalent to a U.S. Bachelor's degree as determined by an accredited credentials evaluation service. Related experience must include at least 1 year of experience in Sun Solaris, c-tree, Oracle Database, MQ Series, Siebel EAI (Enterprise Application Integration) and Siebel EIM (Enterprise Integration Manager)

Please send your resume, referencing Job Order Number WEB406903 to the: PA Careerlink, FLC Unit, 235 W. Chelton Avenue, Philadelphia, PA 19144. EOE.

COMPUTER

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K&M Softech is looking for programmer/system system, software/project engineers or IT professionals. Both entry & experienced levels needed. Some positions require travel. Skills in C++, VB, Java, Oracle, SAP, SQL are plus. Please send resumes to Recruit@kmsoftech.com. EOE.

Staff Engineer/Technical Group Leader - Design component-level hardware for GSM devices to meet European EMC regulatory reqmts. Determine development objectives, perform processor integration, design audio circuitry & provide SIM & DAL interfaces; 40 hrs/wk. Must have MS in Electronics Engrg, Electronics/Communications Engrg or Electronics/Computer Engr & 3 yrs exp OR BS in Electronics Engrg, Electronics/Communications Engrg or Electronics/Computer Engr & 5 yrs progressive exp in the specialty field. Contact Panasonic Mobile, 1225 Northbrook Pkwy, Suwanee, GA 30024, Attn: D. Greer, MR.

Systems Analysts to provide in depth analysis, design, development and testing services for database dev projects; perform project scoping, planning, project time/cost schedules, quality of deliverables, study/evaluate new techs/methodologies; provide business guidance for complex user problems; guide teams by providing methodologies to follow; interact with clients on project related issues. Require Masters degree or foreign equiv in CSor Business Admin. High salary. f/t position. Travel involved. Resumes to HR, Smartsoft International, Inc., 4898, South Old Peachtree Rd, Norcross, GA 30071.

Systems Software Engineer. 8a-5p, 40hrs/wk. Analyze, design, test, support & install LAN/WAN, n/works, data communication systems, servers & workstations; recommend n/work h/ware & s/ware; perform interface using n/work mgmt, CISCO routers, TCP/IP, Ethernet, VLSI tools & WinNT. 2 yrs exp. in job offd or as IT prof'l using above computer skills reqd. Masters or equiv in Comp Sci, Info Sys'tms, Electrical, Electronics or related field of Engg reqd. (In lieu of Masters, Bach in specified majors & 5 yrs work exp as IT prof'l accepted.) Resume: Software Decisions Group, Inc., 235 Donamere Way, Alpharetta, GA 30022.

Data Communication Analyst needed for law firm, 4 years experience in duties or B.S. in Systems Engineering (Computer Science). Please send resume to: contact@casablanca.com or Attn: Human Resources, Casablanca & Associates, P. A., 444 Brickell Ave, 616, Miami, Florida 33131.

I.T. BUSINESS CONSULTANT- manage all info. systems & tech. related business needs for predominantly Spanish speaking clientele. B.S. Computer Sci. or equiv + 2 yr in job or in info systems & fluency in Spanish reqd. Proficiency in Windows NT, Microsoft applications & Lotus Notes & Domino platforms. Apply to: World Business Consultants, Inc. 1191 Hiddenbrook Ln, Suwanee, Ga 30024.

CGI Inform. Sys & Management Consultants, Inc. is looking for Sr. IT Consultant to develop web portal applications using Oracle 9IAS, data warehouse using pl/sql, reports6i & discoverer. Min. MS plus exp. of Oracle X/8/9, 9IAS, PL/SQL, JavaScript. Contact lisa.halter@cgi.com. No calls. EOE

Material Management Analyst wanted by Danco (subsidiary of NCH Corp) to handle management of import & vendor relations, obsolete inventory. Outsourcing activities. Must have minimum bachelor in management with experience. Please apply at chriscot@nch.com. EOE. No calls.

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Integration

continued from page 1

external systems. The software then builds federated or virtual databases that provide access to structured and unstructured data, including XML documents, e-mail and multimedia files, as if it were stored in one place.

The appeal of building such virtual data marts is catching on among users: The data integration market grew 3.3% in 2002 — a year in which worldwide software spending decreased for the first time in the market's history, according to IDC. Data integration software revenue, now about \$1 billion, is expected to near \$1.5 billion by 2007 with compound annual growth of more than 8%, the research firm says.

Meanwhile, vendors are improving their data integration wares. IBM is preparing to release a new version of its year-old DB2 Information Integrator software in the second half of the year. The release will incorporate search technology the company is developing, code-named Project Masala, to help users more easily cull data from a broader range of

quests for data among systems. It tends to be more focused on secure message delivery and business process management than on examining data.

A data warehouse involves a central repository for the data that business applications collect; the warehouse typically is populated through scheduled batch processes that copy data from enterprise systems to the central repository.

Rather than copying data from reference sources, data integration tools maintain a central directory that provides a map of data formats and locations; links between systems are set up and broken down as data aggregation sessions are executed.

Data warehouses are best suited for planned analytic queries that are executed on a regular basis, says Eric Austvold, research director at AMR Research. A data warehouse typically is designed with specific queries in mind and programmed to collect data relevant to those queries, he says.

The strength of data integration tools is in answering questions that are unplanned and not repeated regularly. "The beauty of in-

Comparing technologies

Data integration tools are a complement to data warehouses, not a replacement. Here's how they stack up in several categories.

	Data integration software	Data warehouse software
Applications	Best suited for unplanned, varying queries.	Best suited for frequent, planned queries.
Methodology	Leaves data in its place.	Copies data to central repository.
Timeliness	Can poll sources in real time.	Only as current as the latest batch upload.
Query performance	Data is remote; computations depend on network availability.	Data is local, enabling fast computations.

systems and data warehouse. It did consider the impact of the software on network performance, says Scott Matthew, vice president in the office of technology and applied practices at the Santa Barbara, Calif., bank.

But Pacific Capital found performance was no more of an issue than any new software addition — the bank is mulling other bandwidth-intensive applications, such as VoIP, Matthew says. "It's always a balancing act with networks," he says.

On the plus side, because Avaki's specialty is access — making data from multiple, heterogeneous sources available to applications — it doesn't take on the entire computational burden. Avaki leaves some of the fine querying to specialists, such as data cleansing or business activity monitoring vendors. So the bank's data engines — its business intelligence software from Informatica, for example — still do some of the computational work, and Avaki simply makes the results available to other sources, Matthew says.

The opportunity to reuse analytic resources was a big draw for Pacific Capital. Avaki lets users create "data services" that are similar to the concept of a stored procedure on a database engine. Avaki centralizes these stored procedures so multiple applications can use them, Matthew says.

Kawasaki uses IBM's DB2 Information Integrator to streamline some of its inventory operations. With it, the Irvine, Calif., company has been able to speed the time it takes to ship parts to its 8,000 dealers by reducing the time it takes to pass transactional data from its mainframe to warehouse IT systems.

Instead of waiting for a batch process to run overnight, DB2 Information Integrator pulls orders

from Kawasaki's mainframe soon after dealers place them, says Victor Martinez, manager of data administration and information access services group at Kawasaki.

Using information integration technology is a shift for Kawasaki. The company initially started building traditional data marts, but found it couldn't keep up with demand. As users became aware of the analytic data available from data marts, requests to build more data marts started flowing, Martinez says.

DB2 Information Integrator provided an alternative. "It allowed us to pierce the veil of the mainframe, go in and grab the data we needed without moving it to a data mart," he says. "We can bring up five virtual data marts in the time it took to build one data mart."

For Sutter Health, data integration provided an alternative to costly platform migrations. The Sacramento, Calif., healthcare organization needed a way to provide a single, current view of

each patient, including medical history. But it didn't want to have to migrate dozens of patient systems, spread across its 30 hospitals, to one format.

Sutter maintains more than 100 databases; records pertaining to any one patient might be in 50% to 60% of them, says John Hummel, CIO at Sutter Health. "It sounds simplistic enough, the idea of centralizing patient data," Hummel says. "But it's extremely difficult to get all the disparate pieces of information together and have them make sense."

To accomplish that, Sutter is rolling out software from Initiate Systems, which specializes in customer data integration for healthcare companies. Initiate's Identity Hub software links data from disparate systems without requiring changes to existing records.

That's a key cost advantage, Hummel says. Other healthcare organizations have paid up to \$1 million per hospital to retrofit systems, he says. With Identity Hub, Sutter is spending about \$4 million, or \$1 per patient, across the health group's 30 hospitals to create a master patient index. ■



ROGER J. WYAN

“It sounds simplistic enough, the idea of centralizing patient data. But it's extremely difficult to get all the disparate pieces of information together and have them make sense.”

John Hummel
CIO, Sutter Health

enterprise content, including intranets, extranets, Web sites, relational database systems and content repositories.

Among the start-ups, Avaki last week announced Avaki 5.0, which adds features that let users access third-party software, such as data-cleansing and business-intelligence tools, and make them available as services within Avaki's data grid.

For users, data integration offers an alternative to — though not necessarily a replacement for — traditional enterprise application integration (EAI) and data warehousing.

EAI software, such as that from Tibco, SeeBeyond and webMethods, is used to link application interfaces and shepherd re-

formation integration is being able to answer questions where the data has yet to be organized," Austvold says.

With data integration tools, a user can formulate a question, devise a query and get the results immediately. Conceptually, the idea makes sense, especially considering recent advances in the speed and capacity of networks, hardware and databases, he says.

But skeptics ask whether these tools place an unreasonable burden on computing systems. "You don't want to send a query and have the lights dim," Austvold says.

Pacific Capital Bancorp is rolling out software from Avaki that consolidates, transforms and publishes data from the bank's existing databases, operational



More online!

Find out more about the move toward the consolidation of servers, storage and apps into what is being called the New Data Center at Network World's latest event: Masterminding the New Data Center.

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Symantec tackling integrated management

■ BY DENISE DUBIE

Symantec went on tour last week to promote its plan for a converged security, systems and storage management system.

The company's Secure Enterprise Administration (SEA) road map spells out how Symantec over the next year or so will integrate its security technologies with recently acquired products outside of security. Symantec spent \$150 million on back-up and recovery vendor PowerQuest in December and another \$100 million in February for ON Technology, a software distribution and desktop management software maker.

SEA will enable companies to more easily detect threats, patch machines and back up systems via a common platform, Symantec says. It will sell components of the system bundled and separately.

"The vision is to build integration into each product that would link into an underlying infrastructure and enable the products to work automatically together if a customer chooses to buy multiple products," says Don Kleinschnitz, vice president of product delivery in Symantec's new enterprise administration division.

He says the integrated management software would require IT managers to write policies on which the software would take action across servers, desktops, network and storage devices. For example, if a worm got past the corporate firewall, the security detection software would alert the systems management tools to deliver patches to machines that need them. The storage software then would back up the last known good state of the systems and automatically roll back to that state after the threat was locked down.

Symantec says its products could add systems management capabilities for its midsize customers that don't use such products from Computer Associates, HP and IBM.

Rob Enderle, principal analyst with Enderle Group, says the effort makes sense in that "systems management is already connected to what Symantec currently does in terms of virus protection and security vulnerability checking."

However, getting the pieces to work together will be a challenge.



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The company also will be challenged to displace established vendors, but Symantec could fill technology gaps that midsize customers have in terms of automated

patch management and storage backup and recovery.

"Symantec's ability to incorporate PowerQuest products into its enterprise adminis-

tration console should help considerably in making this appealing to some customers," says Jamie Gruener, a senior analyst at The Yankee Group. ■

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Unfortunately network security has become a costly catch 22. Just when the stakes to your enterprise are highest, you're flooded in waves of security technology that is hard to evaluate, integrate, and deploy. The typically "safe" response is to over-spend and over-build simply because you're overwhelmed not just with what to buy, but how to buy, when to buy, and why to buy.

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BackSpin Mark Gibbs



Anomalous software

After my Backspin column last week on anomalous things, reader Chris Boucher suggested that the message "An unexpected error has occurred" produced by Word should be translated as: "I got tired of writing exception handlers. I really tried to figure out all the things that could go

wrong with this code (and got most of them!) but had to get some sleep sometime, so put this little kludge in for the rest. Sorry that it means that you lost your work just because we had to get the code out the door before it could be completely debugged."

Reader Joanne Bandlow wrote, "The funniest error message I've run across was during boot-up: 'Error: Keyboard not present. Press F1 to continue.'"

Yet another reader, Mike Palombo, sent in one of his favorites: "The Data is the Error." He noted that "it sounds like something you would be told by a guru after climbing a tall mountain and asking about the true meaning of IT life."

Here's another anomalous message: "Vx2 benefits consumers by working with advertisement serving partners to subsidize various software products and services that are free to you, the consumer."

But you have to read the End User Licensing Agreement (EULA) to understand what is really going to happen: "These Terms and Conditions apply to both (1) the vx2.dll, which pri-

marily serves 'popup' and 'popunder' ads, and (2) the related interest profiling application, which primarily gauges users' broadly defined interest categories."

The agreement continues: "Vx2 may enhance or upgrade these applications from time to time. Unless we tell you otherwise, any new products or services we provide or distribute, whether through our own or third-party Web sites or servers, also will be subject to these terms and conditions. Vx2 may amend this agreement at any time without notice and such modifications shall be deemed effective immediately upon posting the changes on the site."

In other words, once you install vx2, the publisher, vx2 Corp., reserves the right to do whatever it pleases to your PC and makes it quite clear that it accepts no liability for any problems.

As the EULA is 22 pages, it is a certainty that 99.9% of users never read it so they also don't read that "Vx2's software also uses artificial intelligence to discern and collect name and address information from online forms that you fill out. We use this information to allow our partners to reach you with personalized and targeted offers and advertisements that are relevant to your interests. We may also contact you directly ourselves with such offers."

Now you might not have come across the vx2

software yet. Even though it has been around since early 2002, it has only recently started to appear in significant numbers. I heard about it from Ed English, CEO of InterMute, which publishes, among other products, a spyware removal utility called SpySubtract.

Vx2 is an example of both spyware — software that gets installed along with another application and is designed to report back to the publisher with data on a user's browsing habits — and adware, which tracks user information to display advertisements that are supposedly relevant to the user. (Note that spyware is often used to connote both types of software.)

The problem with this whole subclass of malware is that unless you run a really tight network, your users have, I guarantee, managed to get spyware installed, and it will screw things up. It might well reveal confidential information, and it will certainly create reliability and stability problems and degrade performance.

My friends, this is an anomalous condition that we're going to look at in depth next week because it is already costing you money. Lots of it.

Shock and outrage and personal experiences to backspin@gibbs.com.



Compendium

By Adam Gaffin

Gaming your life

Intel's IT Manager Game is what "The Sims" would be like if all the Sims worked as IT managers in shops full of

sluggish, annoying end users whose productivity collapsed unless you immediately upgraded their desktops and network gear (with professional-grade Intel equipment). Gain extra budget points by correctly answering trick questions thrown at you in snap meetings by the CEO. Warning: Really dissatisfied employees explode. Requires Flash. Play it at www.nwfusion.com, DocFinder: 1634.

Amazon's new search engine

Well, make that: Amazon's sorta new search engine. A9 (www.a9.com), unwrapped in beta last week, basically consists of Google's database and algorithms coupled with some nice features. If all you're doing is basic search, it will look exactly like Google, only with orange hyperlinks (and, if you move your mouse over the wrong spot, an annoying Alexa popup window that tells you how much traffic the link's site gets).

The improvement comes on the right side of the screen, where you can create a personal history of your searches. Cool beans! The toolbar (of course it offers a toolbar — and of course it's Internet Explorer only at this point) lets you keep notes on specific pages, which is another nice feature to help you keep track of things.

Still, as search engine aficionado John Batelle, who broke the news about A9 last week, asks: Why is Google letting Amazon experiment with its database on a way to out-Google Google? Read more from Batelle at DocFinder: 1635.

Clueless California lawmakers

Speaking of Google, California state Sen. Liz Figueroa (D-Fremont) says she will file legislation to ban its planned Gmail service because the service

will accompany e-mail with, gasp, ads (obviously, she has never received mail from a Hotmail or Yahoo account). Derek Powazek, who is beta-testing Gmail, uses his account to write the senator:

"I am a Democrat and privacy concerns are important to me. I also loathe being forced to consume advertising and therefore appreciate all your work on the California Do Not Call list. But I have to tell you, I encounter more vicious advertising walking down the street than I do in Gmail. E-mail itself is full of awful, flashing, HTML ads because of spam. If you want to fight the encroachment of advertising into our daily lives, I'm all for it, but fighting with Gmail before it even launches is picking the wrong battle at the wrong time. . . ." Read his complete message at DocFinder: 1636.

Fiber to the home

Jim Stewart's been thinking about fiber to the home — he looks at why we'll need it and who should provide it (hint: It's not your friendly incumbent carrier or cable provider).

Interestingly, he says, wireless will play a big role in the Home of Tomorrow — by tying together all the interesting gizmos we'll have all over the place — but ultimately only fiber can provide the bandwidth big enough to connect us to the outside world. Read his thoughts at DocFinder: 1649.

On the Cisco LEAP hacking tool

Mike Rowehl reacts to the news that somebody's released a tool for automating attacks against Cisco's Lightweight Extensible Authentication Protocol (LEAP) wireless encryption: "... Sure, it's hard to get security right. But this time the problem seems to be just pure greed. Everyone jumped in before they were really ready." Read more at DocFinder: 1650.

Accept no substitutes, except when 'Net Buzz is away. Gaffin is executive editor of Network World Fusion; read Compendium daily at www.nwfusion.com/compendium/index.html.

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